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Steel Foundry Capacity Doubled

Reconstruction, Rearrangement and Expansion of
Bucyrus Foundries Without Interrupting
Production Yield Notable Results

BY GILBERT L. LACHER

TO lay out a new foundry for economical production is in itself a task requiring both experience and engineering talent. To expand and effectively rearrange an existing plant without interrupting output is a much more difficult problem. Nevertheless it is a problem which frequently demands solution in a period when the expansion of established plants is a more common development than the construction of entirely new manufacturing facilities. There are times, of course, when a manufacturer finds it possible to erect an additional plant unit on a new site without disturbing operations in the remainder of the works. More often, however, because of lack of space or the convenient location of a unit in relationship to other parts of a manufacturing plant, it is necessary to expand, reconstruct and rearrange an existing department.

In fact, this was the very predicament in which the Bucyrus Co., South Milwaukee, Wis., found itself when after years of steady growth it became clear that its foundry facilities were no longer adequate to supply needs of its finishing and assembling departments.

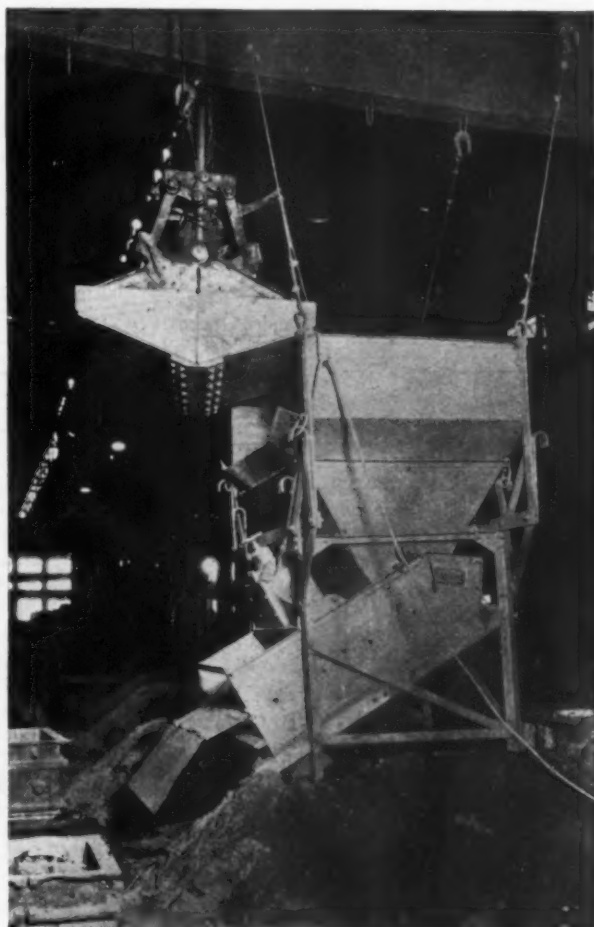
Steel, gray iron and brass foundries were all housed in one structure, and their arrangement in relation to each other was largely in conformance with additions which had been made from time to time to suit the original layout of the building and equipment. The finishing end of the gray iron and brass shops was at the opposite end of the building from the steel foundry, so that the progress of the work was in counter directions. The open-hearth furnaces were situ-

ated adjacent to the cleaning department instead of being close to the molding floors. As a result, metal had to be conveyed from the furnaces to the molding department at the other end of the foundry and then back again in the form of castings to the cleaning department. The tracks serving the open-hearth furnaces adjoined the siding leading to the steel castings cleaning department. Molding sand was stored in a shed

adjacent to the foundry and handling from freight car to storage and from storage to molding room was entirely by shovel and wheelbarrow.

The lack of balance between the various departments, the inadequacy of facilities for the storage and handling of raw materials and castings, the complications arising from the operation of three foundries — steel, iron and brass—in one building, all these factors impeded output and kept costs on too high a level. Hence the management set to work to find a solution for the problem and to supplement its own findings called into consultation Frank D. Chase, Inc., engineer, Chicago.

How effectively the foundries were expanded and rearranged can best be grasped by comparing the plan views of the old and new layouts. First of all the gray iron and brass foundries were removed to another building which was constructed parallel to the steel foundry on the site of a former forge shop. The space vacated by the iron and brass shops was then added to the steel foundry, and the relative location of the molding and cleaning department of the steel shop was reversed. The cleaning de-



A Magnetic Vibratory Screen, Suspended by Cables from Hooks on the Bridge of an Overhead Crane, May Be Shifted to the Most Convenient Position for Operation. A grab bucket from the crane hoists sand to the screen for sifting

partment was placed in the area formerly used by the gray iron and brass foundries and the portion of the building adjoining the open-hearth furnaces which was formerly the cleaning department was added to the molding room.

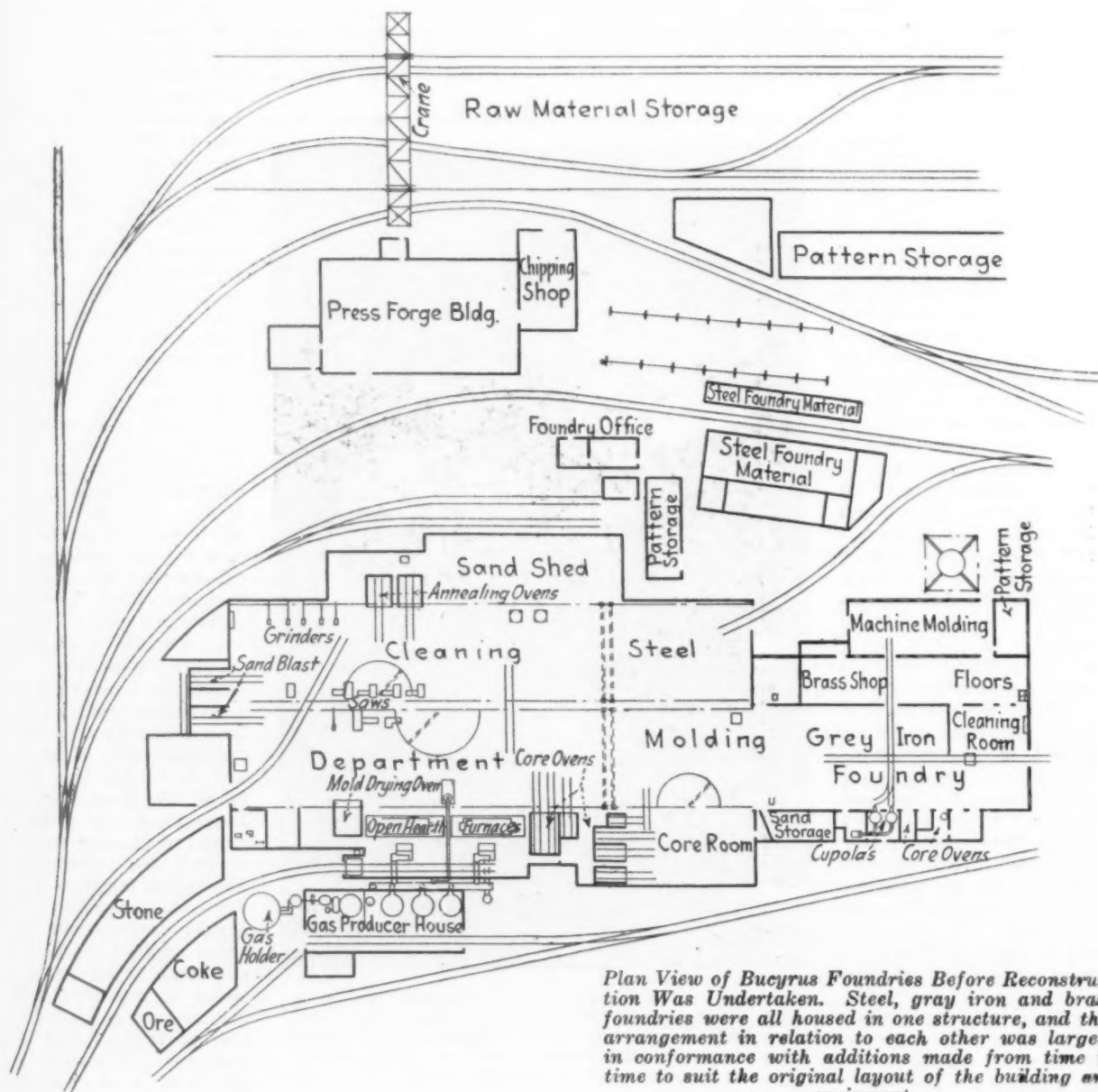
The final result of the rearrangement was two parallel 60-ft. bays extending the entire length of the building, or 500 ft. The bay next to the open hearth furnaces is devoted entirely to the production of heavy castings. The other bay is used largely for smaller work and for that purpose an electric furnace was installed between the molding area and the finishing department. This unit produces three tons of metal per charge and yields nine to ten heats per 24 hr. Steel scrap and turnings are charged and the cost of the metal as it issues from the furnace is slightly below the cost of steel from the open hearth furnaces.

There are two 15-ton basic open hearth units which are used alternately, one being active while the other is being repaired. Producer gas is used for fuel, and from 18 to 20 heats a week are obtained. Among contemplated improvements in this department is a ramp from the pig iron and scrap yard which will permit charges to be conveyed directly to the charging floor. At present the charging boxes are still raised by overhead crane from the ground level to the charging floor, where they are placed on cars on a track located in front of the furnaces. A trolley driven charging machine serves both furnaces.

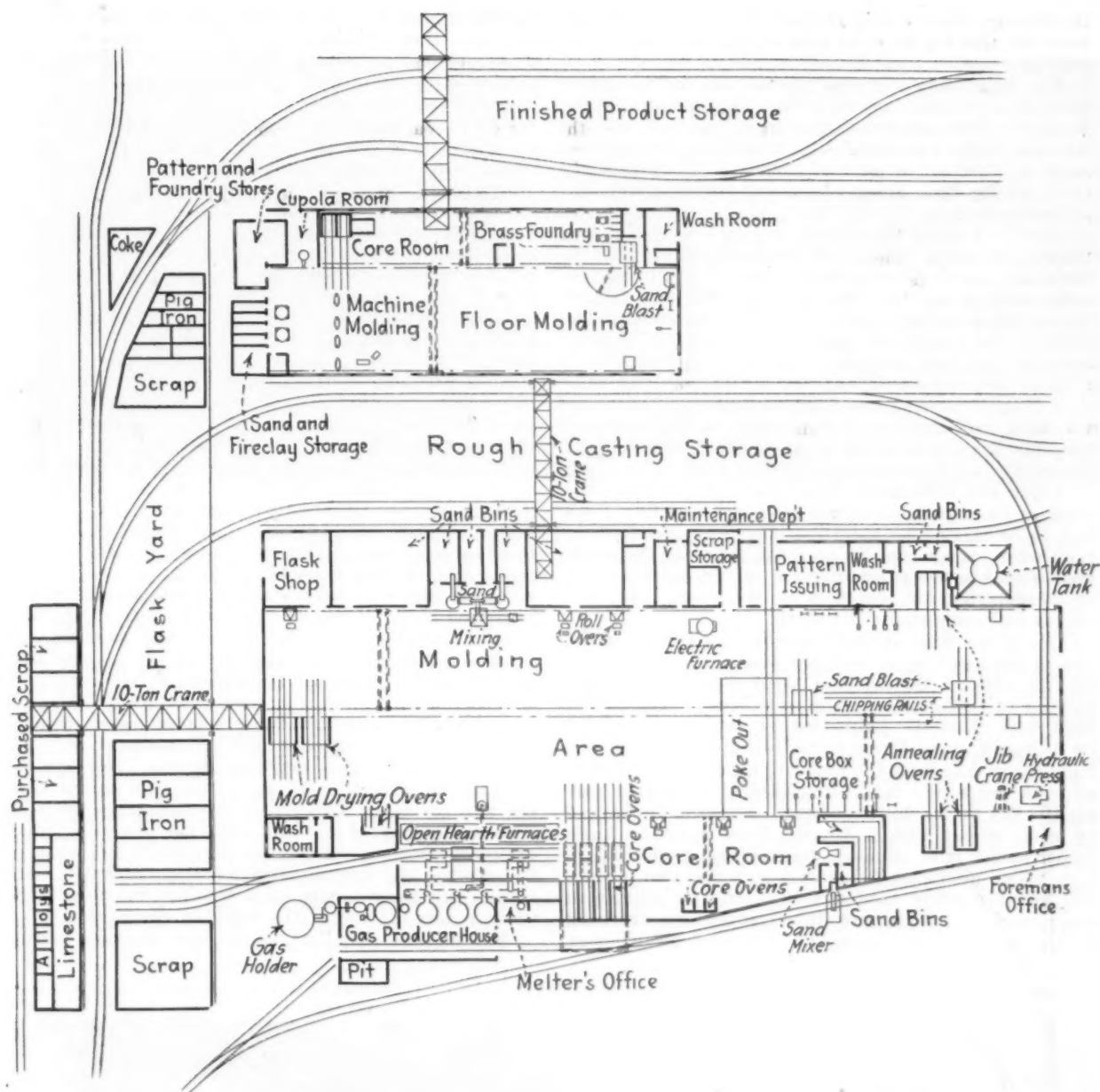
Seventy per cent of the steel produced in the foundry comes from the open hearth furnaces and 30 per cent from the electric furnace. As practically all of the equipment manufactured by the Bucyrus Co. is built to order, the operations of the foundry are substantially like those of a jobbing shop. A wide range of work is handled, including some unusually large castings. Among typical large jobs may be mentioned a car center casting for a revolving shovel frame, which weighed 24,000 lb., and a revolving frame for the same shovel, which weighed 22,000 lb.

About the only production job in the foundry is the manufacture of links for caterpillar traction belts. This work is handled on the electric side. The links range in weight from 100 to 400 lb. apiece and approximately 100 are cast per day. They are poured green, so that there is no time interval for mold drying to interrupt the continuity of operations. For the rapid making of molds there are two jar-ram roll over machines, each machine being served by a sand hopper. Arranged in front of the machines are tracks carrying skid rail cars. One machine operator molds the drags and the other the copes, and these are placed on the cars, each car having a capacity of five flasks. The sequence of these operations is as follows: as soon as a car of drags has been loaded, it is moved aside, whereupon the cores are set. Following this operation the car is pushed to the cope machine, where the molds are closed and then carried away by overhead crane to the floor adjoining the electric furnace for pouring.

To facilitate material handling, concrete aisles have



Plan View of Bucyrus Foundries Before Reconstruction Was Undertaken. Steel, gray iron and brass foundries were all housed in one structure, and this arrangement in relation to each other was largely in conformance with additions made from time to time to suit the original layout of the building and equipment



The Bucyrus Foundries Today, from a Drawing by Frank D. Chase, Inc., the Engineers Who Worked Out the Reconstruction and Expansion Program. It will be noted that the gray iron and brass foundries were removed to a new building and the space vacated was added to the steel foundry. The relative location of the molding and cleaning departments of the steel shop was reversed. The cleaning department was placed in the area formerly occupied by the gray iron and brass foundries, and the space adjoining the open-hearth furnaces, formerly utilized for cleaning, was added to the molding room. An electric furnace was added to the melting capacity. The steel foundry, as it now stands, consists of two parallel bays, one of which is the electric furnace department and the other the open-hearth department.

been laid throughout the molding area. Flasks, patterns and cores are brought to the molders by a gasoline-driven tractor, thereby making for a great saving in crane service. Formerly patterns were brought in from the yard on a transfer car, whereupon they were picked up by crane and distributed to the part of the foundry where needed. Whenever this happened all of the other cranes on the runway had to move toward the other end of the shop to make way for the crane handling the patterns or flasks.

On the molding floor 75 men are engaged in molding, of which 25 are apprentices. An experienced foundryman acts as apprentice instructor and the company follows the consistent policy of selecting molders from the pick of the apprentices. This has made the organization practically independent so far as the supply of molders is concerned.

Practically all the open hearth castings are poured into dry molds. A portion of the electric furnace side of the foundry, at the extreme end of the building, is used for open hearth molding. In one corner of this section of the shop is a 7-ton jolt machine, which is used in connection with some of the heavy work, prin-

cipally on the night shift. Connecting this department with the main open hearth molding area are two oil-fired mold-drying ovens, where the molds are ordinarily dried at night, being pulled out on the heavy side the next morning. As a rule molders on heavy work do not close their own molds. The cores are set and the molds are closed on a dry floor adjoining the discharge end of the ovens, where the castings are poured. Another mold-drying oven has been built next to the open hearth furnaces. All of the mold-drying ovens are of the car type, the cars running on cast-iron balls. The advantage of propulsion on the balls is that the cars are thereby kept free from bearings, the grease in which would bake in the heat of the ovens. Furthermore, there is no sliding friction to overcome in handling the cars—only the rolling friction of the cars over the balls.

A new core room has been built next to the open hearth furnace. To prevent any interruption in operations the new steel work was constructed over the old core room, and with the completion of the improvements the old roof and columns were torn down. In fact, the work was done with the loss of but one of

the old core ovens during construction. The new equipment includes for car-type core drying ovens and three rack-type ovens, arranged for either oil or coke combustion with firing pits underneath. An overhead traveling crane which formerly served the open hearth department now commands the larger portion of the core department as well. The completion of the core room has yielded a gain of 2500 sq. ft. of molding space to the main shop, which was formerly occupied for core making.

The core room mixes and prepares its own sand, whereas formerly sand had to be conveyed to it across the entire plant. Core sand is unloaded on a track just outside of the building, passing by gravity into a track hopper from which it is fed by a continuous bucket elevator to two concrete sand bins, having a storage capacity for four carloads. Core benches are located adjacent to the outside wall of the building, where excellent light enters through continuous sash. To convey sand from the mixing equipment to the benches a monorail system is being constructed. A large room for core box storage adjoins the core room.

Cores are distributed from the core room to the molders by a gasoline-driven tractor. Formerly cores had to be carried by hand into the main shop, where they were transported by overhead crane to the molders. This had the effect of tying up the crane service or of delaying the delivery of the cores until the cranes had completed other work.

One of the most striking improvements in the plant lies in the handling of molding sand. On the electric furnace side of the building three concrete bins, extending 12 ft. below the floor level, have a capacity of 6000 tons of sand. Shipments of sand are unloaded by a gantry crane through hatches in the roof of the bins. New sand from the bins will ultimately be fed by conveyor belts into two 8-ft. mixers. At present new sand is fed to the mills by hand. Old sand is charged by grab bucket into a hopper, from which a knife feeder passes it to elevators serving two overhead hoppers which discharge by gravity into the two mixers. The mixed molding sand is then passed by gravity to large buckets, which are taken away by overhead trolley cranes to the molders. Formerly twelve men

prepared sand for the molders, but now only six are required, three working day shift and three at night. After castings are shaken out the sand is screened. The screen is magnetic, with 30 vibrations per second, and is suspended by cables from hooks fastened on the bridge of an overhead crane. This permits the screen to be shifted to the most convenient location for operation. A grab bucket from the crane hoists sand to the screen for sifting.

The finishing end of the building is both well arranged and completely equipped. The first department is the poking out floor, where the castings are shaken out, the cores poked out, and the gates and risers cut off. Three oxyacetylene torches—all three of which are in service during the day and one during the night—are used to cut off risers and gates and to cut up rejects which were formerly broken with a drop. Alloy steel is painted in different colors to keep it separate from other castings. This is because the reclaim value on alloy risers is considerably higher than on carbon steel risers and gates.

In the chipping department skids or chipping rails have been provided on which castings are lined up so that the chipper need not wait for the crane to bring a new casting every time it has completed a given chipping job. Every chipper—and approximately fifty are employed—has from 50 to 100 ft. of skid and is equipped with a pneumatic chipper with 2½-in. stroke. Two sand blasts of the car type are located at opposite ends of the chipping rails. Four swing grinders and three stand grinders are situated on the electric furnace side of the shop and three swing grinders and four stand grinders are on the open hearth side. Tracks from both bays run into three welding rooms, respectively equipped with two 250-kw. welders and one 500-kw. welder. Two tumbling barrels, one 42 x 60 in., and the other 60 x 72 in., are situated in the electric furnace bay. Three car-type annealing furnaces have a capacity of 40 tons each per charge. Other equipment includes a 350-ton straightening press, a 15-ton scale and several smaller scales. Shipments are loaded into freight cars on a two-car shipping track which enters the end of the finishing department.

For material handling in the steel foundry proper



Two Oil-Fired Mold-Drying Ovens Connect the Parallel Molding Bays. Molds are usually dried at night, being pulled out in the open hearth bay in the morning. All mold drying ovens are of the car type, the cars running on cast iron balls



Practically the Only Production Job in the Foundry Is the Casting of Caterpillar Links. For the rapid making of molds for the links there are two jar-ram rolover machines, each of which is served by a sand hopper. In front of the machines are tracks carrying skid rail cars with capacity for five flasks each. The cars greatly facilitate operations. As soon as a car has been loaded with drags it is moved aside, whereupon the cores are set and it is rolled in front of the cope machine where the molds are closed

ten overhead traveling cranes have been provided. Two 20-ton and three 10-ton cranes command the open hearth bay and one 5-ton and four 10-ton cranes the electric furnace bay. The open hearth charging platform and the new core room are each served by a 5-ton crane.

The gray iron and brass foundries are housed in a new building, 100 x 250 ft., with a 65-ft. main bay and a 35-ft. side bay. The gray iron department is served by a No. 6 cupola, four squeezers for light work, a 4-ft. mill and loader for mixing sand, two heavy cranes, two car-type core and mold-drying ovens arranged for oil or coke firing, rack type ovens, a sand blast and a tumbling barrel. The core room is in the small bay with the brass foundry, and both departments are served by a 5-ton overhead electric crane. In the brass shop are two coke-fired tilting furnaces with carborundum pots, yielding 300 heats per pot. The brass foundry has a capacity of one ton of brass castings per day, or about 25 tons a month. Brass turnings and borings from the company's machine shops are melted, the metal being reclaimed by a magnetic separator. The building is of the most modern construction, with continuous sash in the walls and monitor.

The gray iron and brass plant was finished three years ago. The improvements to the steel foundry represents a gradual development and, as indicated, are not yet entirely completed. The present capacity in steel is 1100 tons a month, as against 600 tons four years ago. The capacity of the gray iron plant is about 400 tons a month.

Making Nails in Mexico

WASHINGTON, Sept. 30.—Fabrica de Clavos de Tampico, S. A., a Mexican company incorporated in January, 1925, with a working capital of \$75,000, United States currency, for the purpose of manufacturing nails, began operations on July 15, and, according to a report under date of Aug. 5 received by the Iron and Steel Division, Department of Commerce, from Consul Charles A. Bay, Tampico, was running at full capacity at that time. In a special circular on the subject it is stated that the company is composed of an American president, assisted by other American officers and various local hardware dealers of other nationalities as stockholders. The plant is described as being modern and large enough for all anticipated needs and equipped with seven nail machines (Glader) and two polishers of the tumbler type. It also has one staple machine and one rumbler. The daily capacity of each machine

The yard development incidental to the expansion of the Bucyrus foundries commands more than passing attention. The space between the gray iron and steel plants is utilized for storage of rough castings, being served by a gantry crane. The crane also unloads molding sand into the hatches of the bins of the steel plant and steel turnings into a scrap bin serving the electric furnace. Running across the ends of both the gray iron and steel foundries is another yard served by gantry crane, which is used for storage of pig iron, scrap, coke and flasks used in both plants. Beyond the raw material yard are supply sheds for brick, ganister, magnesite, dolomite, etc. Patterns are conveyed to the foundries from a pattern storage building by tractor, concrete sidewalks serving as runways. In a yard paralleling the outside of the gray iron plant is space for the storage of finished castings. This is also commanded by gantry crane.

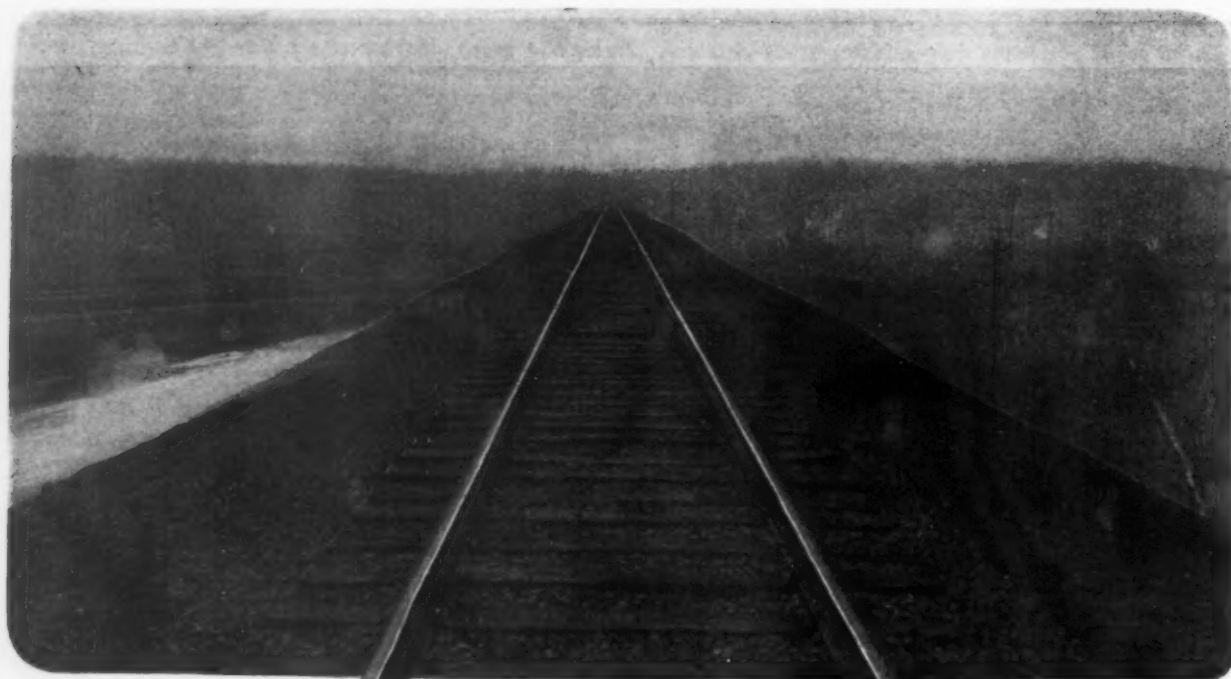
The heat treating department is located in a separate building, and is equipped with one car-type furnace.

The heat-treating process is a separate operation and is entirely distinct from the annealing, which is done in the foundry proper. The total output of the steel foundry is annealed in accordance with the best commercial practice and all alloy and high carbon steel is double annealed in the three large and modern car-type furnaces located in the foundry cleaning department. These furnaces are equipped with indicating pyrometers and multiple recorders.

is approximately 625 kilos, including the staple machine, making a total daily output of about 5000 kilos. The products vary in size from $\frac{3}{8}$ in. to 5 in. At present nail wire is imported from the United States, but as the business of the concern grows, it is declared, it is expected that wire rods will be imported and wire drawing machinery installed.

"A large import tax on nails, amounting to 0.40 peso per kilo, plus a surtax of 12 per cent of the duty, together with the proximity of a large market in northern Mexico, offer many advantages to the profitable manufacture of these products in Tampico," the circular states.

American shipyards were building or under contract to build for private shipowners 140 steel vessels of 148,127 gross tons on Sept. 1, compared with 74 steel vessels of 148,100 gross tons on Aug. 1, according to the Bureau of Navigation, Department of Commerce.



High Line Reduces Ore Haul

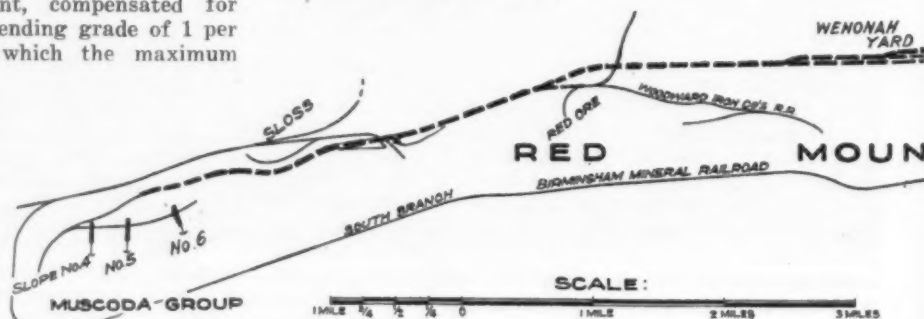
Tennessee Company Has Unobstructed Track from Mine to Furnaces—Heaviest Grade in Direction of Loaded Movement

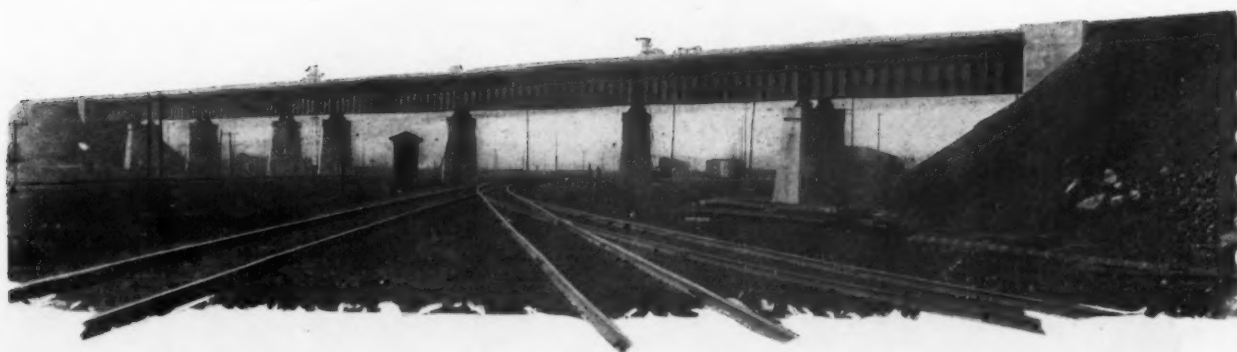
THE proximity of iron ore, fuel and limestone has been a distinctive feature of the iron and steel industry of Alabama. Both the Fairfield and Ensley plants of the Tennessee, Coal, Iron & Railroad Co. are adjacent to coal operations at the north; in fact, the mouth of one coal mine is within a few rods of the company's coke plant at Fairfield. Limestone quarries are also close at hand. The longest haul has been from the ore mines, which are situated five miles south of Fairfield in Red Mountain. This distance, however, is broken by an irregular terrain; hence ore shipments to the company's blast furnaces at Ensley have had to follow a long circuitous route with heavy grades and numerous grade crossings.

It was with a view to securing a direct and unobstructed haul from Red Mountain that the construction of a new industrial railroad track was undertaken in June, 1924. This line, five miles in length, connecting Fairfield with the ore properties, has become known as the "High Line" because of its elevation over the valleys and its overhead crossings above all railroad tracks and roadways. Placed in operation in June of this year, the high line provides a means for safe, rapid, unobstructed and economical movement of ore. The heaviest grade is in the direction of loaded movement, so that gravity is an advantage rather than an impediment to the haul. The descent from the mountain for approximately two miles to Valley Creek, which marks the low point of Jones Valley, is on a maximum grade of $1\frac{1}{2}$ per cent, compensated for curvature. There is then an ascending grade of 1 per cent for one-half mile, after which the maximum gradient is 0.4 per cent. The momentum acquired by the loaded cars in the two-mile descent is utilized in ascending the 1 per cent grade. The plant terminus of the high line is at Fairfield and the haul to Ensley is about six miles beyond, making a total distance from Red Mountain to the blast furnaces of 11 miles. The former haul was 15 miles,

but the saving of four miles in distance does not reflect the even more important advantages derived from grade separation and the elimination of heavy grades. The high line fits in particularly well with plans for blast furnaces at Fairfield.

A corollary development of the high line was the construction of a 185-car capacity yard with track scales for assembling and classifying ore. This yard, which is at the southern terminus of the high line, is connected with all three of the company's red ore deposits, respectively known as the Venonah, Ishkooda and Muskoda groups. The company had tracks serving these mines, and the Wenonah and Ishkooda groups were connected by this trackage. The Muskoda group, however, lies some distance to the southwest, and it was necessary to build four miles of track to connect all three groups and secure a central point for assembling all the ore. In these groups, extending through a distance of 12 miles along the side of Red Mountain, the Tennessee company operates 11 red ore mines with slope entrances at elevations ranging from 710 to 900 ft. above mean sea level. The assembly yard is at an elevation of 638 ft., and five miles away across Jones and Possum Valleys, and Flint Ridge, which rises between them to an elevation of 620 ft., are the private industrial tracks which serve the main operations of the company. These tracks are at an elevation of 600 ft. Possum Valley drops to an elevation of 525 ft. and Jones Valley to 490 ft.



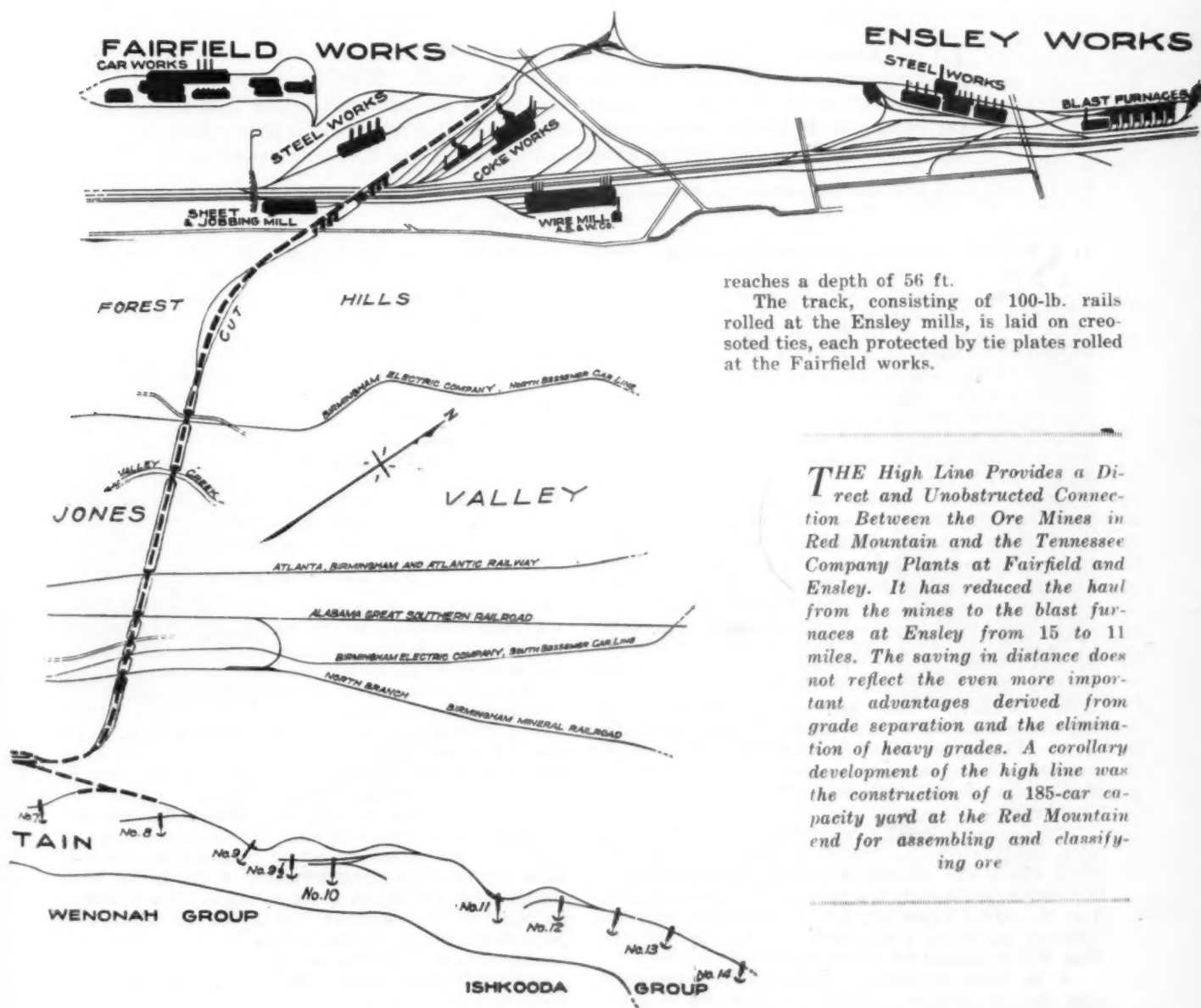


The Largest Bridge, 800 Ft. Long, at Fairfield, Crosses Five Railroad Tracks, a Private Road and a Waterway

The high line necessitated five miles of very heavy construction and was an unusually ambitious undertaking for a purely industrial railroad. Nine bridges were built over railroad and utility tracks and public highways and one over Valley Creek. The bridge, shown in the illustration, is the largest structure, crossing over a private road, a waterway and five railroad tracks. It is 800 ft. in length, of deck plate girder construction, with spans varying from 53 to 110 ft. in length and girders of a uniform depth of 11 ft. In addition to the bridges, there are two concrete arches, six concrete waterways and seven cast iron pipe drains. The masonry contains approximately 22,000 cu. yd. of concrete and 685,000 lb. of reinforcing steel. The

bridges contained 1660 tons of structural steel. All of the reinforcing steel and a large portion of the bridge steel were rolled by the Tennessee company at its Fairfield and Bessemer mills, and all of the steel fabrication and erection was handled by company forces.

For fills 1,100,000 cu. yd. of material was required. For that purpose slate, rubbish and slag from the company's mines and manufacturing plants were utilized. The deepest fill is 50 ft. high. The high line trestle required 337,562 lin. ft., or over 61 miles of pine poles, all of which were cut from company properties. Excavation was not so heavy, amounting to only 195,000 cu. yd. However, the largest cut, through Flint Ridge,



reaches a depth of 56 ft.

The track, consisting of 100-lb. rails rolled at the Ensley mills, is laid on creosoted ties, each protected by tie plates rolled at the Fairfield works.

THE High Line Provides a Direct and Unobstructed Connection Between the Ore Mines in Red Mountain and the Tennessee Company Plants at Fairfield and Ensley. It has reduced the haul from the mines to the blast furnaces at Ensley from 15 to 11 miles. The saving in distance does not reflect the even more important advantages derived from grade separation and the elimination of heavy grades. A corollary development of the high line was the construction of a 185-car capacity yard at the Red Mountain end for assembling and classifying ore



New and Practical Safety Suggestions

Specific Mechanical Devices for Accident Prevention, Ways and Means of Stirring Up Interest in Safety and Improved Educational Methods Described

FIVE thousand executives met in Cleveland Sept. 28 to Oct. 1, inclusive, to exchange ideas and information on safety work. Many of these ideas brought before the fourteenth annual congress of the National Safety Council are applicable to plants in the iron, steel and metal working industries which are below "par" on the average number of accidents per thousand man-hours.

"SAFETY never interferes with efficiency." Coming as a spontaneous interjection in the discussion of a paper before the metals section of the congress, this slogan may have as fundamental an effect on industry as its famous predecessor, "Safety First." For there is a growing recognition of the necessity for practical demonstration of the usefulness of safety work. One step is to convince business men that properly applied safety methods do not hamper output: the next is to show that mental security from worry about possible dangers does actually pay in dollars and cents.

M. E. Danford, works manager, American Rolling Mill Co., Middletown, Ohio, had been emphasizing the need for convincing employers of the value of safety work. He had pointed out that a continuous safety program results in lower insurance rates, in steadier attendance and lower turnover of labor. He had urged his listeners to work for a policy of steady expenditure of funds for safety in lean years as well as good. And in the discussion which followed, a voice from the audience made itself heard: "Safety never interferes with efficiency." The chairman, T. H. McKenney, superintendent labor and safety, Illinois Steel Co., South Chicago, recognized the value of the phrase. He requested the audience to express its views as to the correctness of that statement. The rising vote was unanimous.

Consensus of opinion was that successful conduct of a safety campaign depends largely upon the foreman, who is the keynote of accident prevention work. Executives are usually too busy to give personal attention to safety education, but if superintendents and foremen are given a thorough training, the information will be passed on to the individual worker.

J. E. Walters, General Electric Co., Schenectady, said that his company handles all problems of safety work in foremen's conferences. Standardization is

secured since all foremen get the same instructions. Accidents were reduced 40 per cent at the West Lynn, Mass., works of this company last year.

E. G. Quesnel, safety engineer, Commonwealth Steel Co., Granite City, Ill., said that his company has one safety man for a group of 20 men. These meet with the general manager once a month. The record of this meeting goes to another group meeting which the president attends. All records are printed in the plant magazine. His company's plant was operated 21 days with over 2000 men without a lost time accident.

John Eib announced that the Joliet works of the Illinois Steel Co., of which he is safety director, established a record this year by operating 116 days with 3270 men without a lost time accident.

New Devices Described

A NUMBER of interesting methods for stimulating interest in accident prevention work and numerous mechanical devices were described before the mechanical meeting of the metals section of the council. J. A. Hughes, superintendent of transportation and labor, Duquesne Works, Carnegie Steel Co., Pittsburgh, discussed "Transporting Steel Products Safely." He stated that red flags are used instead of the A. R. A. blue because the men can see red quicker and some do not understand the significance of blue.

Representatives of the Ford Motor Co. and the Bethlehem and Commonwealth Steel companies stated that their companies had adopted red metal instead of cloth flags for the plant railroads. C. M. Brady, Wisconsin Steel Co., South Chicago, stated that following an accident his company had given all track men goggles for use in cutting bolts.

Asked how to sell the safety idea to plant railway men, Mr. Hughes replied that talks are made to the foremen and the latter explain the dangers to the men but the work takes years of patience. They have much

trouble in handling material to and from cars with electric magnets. If trainmen damage the equipment in handling work they are discharged.

W. J. Hanford, National Malleable & Steel Castings Co., Cleveland, during the discussion said that in his company's plants all crane cables are inspected by allowing the cables to run down through two pieces of white waste which reveals the presence of broken strands. Then a cable dressing is put on. Shoes, leggings and clothing are inspected daily and when a man goes to work he must show a card indicating that these have been inspected. As a result burns in the company's plants have been almost eliminated.

The general round table conference discussed "The Best Safety Kink I Have Known." E. G. Quesnel, Commonwealth Steel Co., told of the safety work done by the 600 colored employees in his company's plant. The negro laborers formed a booster organization of their own to help the company's own safety committee and set the pace for all the other employees. As a result, the St. Louis Safety Council this year will hold a conference that will include colored workers in all industries in that city. Mr. Quesnel stated that his company has replaced pointed nails in its foundry and core departments with blunt nails. As a result, accidents from nails have been eliminated.

R. G. Adair, superintendent of safety, American Rolling Mill Co., announced a new plan his company has adopted for getting safety rules before its men. This is by the use of bulletin boards and placards and the monthly distribution of placards with special safety messages. He also stressed the importance of the proper introduction of new men to their jobs.

H. G. Hensel, safety director, Youngstown Sheet & Tube Co., Chicago, explained the method his plant has adopted in getting the foremen to talk to the men on safety. Pertinent safety facts were outlined in a bulletin and the foremen were instructed to pass this information along to the men. After using this plan for a while the foremen started to talk safety themselves and they continued to do this without use of any notes prepared by the company.

K. M. Bradley, General Electric Co., West Lynn, Mass., stated that at his plant charts with colored pins are displayed showing accidents. These are displayed in different departments and arouse competitive interest between the departments.

One suggestion made was that safety locks and tags be provided for switches and valves, being regarded as safer than printed warnings in that their use removes the human element.

Material Handling Safeguards

HAZARDS of the punch press department other than machine hazards were discussed at a meeting of the automotive section by W. F. Dittmer, supervisor of safety, Westinghouse Electric & Mfg. Co., East Pittsburgh. At the same session there was an exhibit, demonstration and discussion of methods of preventing accidents on power presses. Mr. Dittmer described the safety methods employed in handling material in the metal stamping department of the Westinghouse company which employs 700 to 800 men and women and operates 325 punch and drawing presses, shears and other equipment. He said that during seven and a half years 80 per cent of the lost time accidents occurred away from the machines. About 75 per cent of these or over one-half of the total were caused in handling material and falling objects. The work is so diversified that there is considerable cutting of stock, making extra handling. Many dies are used, running up to large sizes and a lubricant used on these makes them slippery and their handling hazardous.

Taking up the subject of handling raw material, Mr. Dittmer said that sheets are placed on hand trucks and stacked on skids which loaded may weigh two or three tons. These skids are piled on one another. The use of skids saves 80 per cent of the labor over the former method of stacking in high piles and reduces the hazard of accidents. A crane takes the loaded skids to the shears. One advantage of the skids is that a chain swing can be placed under them. Something similar can be used in handling the sheets, as they are of light gage.

To reduce handling to a minimum in the shears, two devices have been developed and with the aid of these one man does as much as three when slitting shears were used and there are no large burrs on the edges of the sheets to injure the punch press operators. At the rear of the machine a long rack is placed on rolls and as the sheets are sheared they fall on this and stack themselves flatways. When the stack is

(Continued on page 1007)

New Officers Elected

CHARLES B. SCOTT, of the Chicago Bureau of Safety, was elected president of the National Safety Council for the ensuing year. C. B. Auel, Westinghouse Electric & Mfg. Co., East Pittsburgh, was elected vice-president; Harry E. Webber, Illinois Bell Telephone Co., Chicago, was elected treasurer and William H. Cameron, Chicago, was reelected managing director.

New members of the executive committee include G. A. Kuechenmeister, Dominion Iron & Forge Co., Walkerville, Ont., and A. M. Williams, Chrysler Corporation, Detroit. Members reelected include T. H. McKenney, Illinois Steel Co., Chicago; G. E. Sanford, General Electric Co., Schenectady, N. Y., and C. B. Auel, Westinghouse Electric & Mfg. Co.

The metals section decided to create an executive board of six members composed of the three active officers, chairman, vice-chairman and secretary, the past chairman and two members from the section. The board will act in an advisory capacity. This section



C. B. AUDEL

elected the following officers: chairman, A. C. Gibson, manager, industrial relations department, Spang-Chalfant Co., Inc., Pittsburgh; vice-chairman, F. G. Bennett, director of safety, Buckeye Steel Castings Co., Columbus, Ohio; secretary, J. A. Northwood, Bethlehem Steel Co., Johnstown, Pa. The executive committee is composed of the three below named officials. T. H. McKenney, Illinois Steel Co., South Chicago, the retiring chairman; H. G. Hensel, safety director, Youngstown Sheet & Tube Co., Chicago, and John A.



CHARLES B. SCOTT

Cartel, safety director, Carnegie Steel Co., Pittsburgh.

The automotive section named the following officers: G. A. Kuechenmeister, personnel manager, Dominion Forge & Stamping Co., Walkerville, Ont., chairman; T. O. Meisner, safety engineer of the American Can Co., New York, vice-chairman in charge of program; H. F. Dunnebacke, safety director, Olds Motor Works, Lansing, Mich., vice-chairman in charge of power presses, and H. M. Williams, Chrysler Corporation, Detroit, Mich., secretary.

Machine Tool Outlook Brighter

President of National Association at Convention
Stresses Improvement in Business—Organization
to Hold an Annual Machinery Exhibition

MUCH more satisfactory business conditions prevailing in the machine tool industry were emphasized in addresses before the National Machine Tool Builders' Association at its twenty-fourth annual convention, on Wednesday and Thursday of last week, in Washington.

O. B. Iles, International Machine Tool Co., Indianapolis, president of the association, said: "After five years of very unsatisfactory business for many of us the outlook seems to be brighter." E. F. Du Brul, general manager of the association, went further in stating that it would appear that new orders in the industry are now very close to the level reached in the spring of 1923, and that was one of the best buying periods since the war.

The association went on record almost unanimously in favor of holding an annual exhibition of machine tools, there having been only one dissenting voice. It was the opinion as expressed by several prominent members that it would be best to combine the association's exhibit with that of the American Society for Steel Treating, the American Foundrymen's Association or similar organizations, but failing in efforts to bring about that cooperative movement the association will probably hold an independent exhibition. The matter was referred to the board of directors with instructions to take suitable action looking toward the inauguration of the exhibit feature possibly in conjunction with the next annual meeting. There was, however, an opinion among several that it would be best to have the exhibition at a time other than that taken up by the association's own meeting. Efforts will be made to induce the Society of Automotive Engineers and other similar technical associations to hold their annual meetings in conjunction with the machine tool exhibition.

Officers Elected

H. M. Lucas, president Lucas Machine Tool Co., Cleveland, was elected president to succeed O. B. Iles.

J. G. Benedict, treasurer and general manager of the Landis Machine Co., Waynesboro, Pa., was elected first vice-president; H. L. Flather, president of the Flather Co. and the Flather Mfg. Co., Nashua, N. H., was made second vice-president, and Edward A. Muller, vice-president and general manager King Machine Tool Co., Cincinnati, becomes treasurer. Three new members of the board of directors were elected: P. E. Bliss, vice-president Warner & Swasey Co., Cleveland; Henry K. Spencer, secretary and manager Blanchard Machine Co., Cambridge, Mass., and Edward A. Muller, King Machine Tool Co. These three succeed C. Wood Walter, vice-president Cincinnati Milling Machine Co.; Frank N. MacLeod, president Abrasive Machine Tool Co., Providence, R. I., and the retiring president, Mr. Iles.

Code of Ethics Adopted

One of the most important acts of the convention was to adopt the code of business ethics patterned after that of the Chamber of Commerce of the United States. This code of ethics, since changed slightly, was presented to the association at its spring meeting at Buffalo and was published in full in THE IRON AGE of May 7, 1925, p. 1358. President Iles expressed the hope that these principles will serve to correct or eliminate some of the business practices which have crept into machine tool dealings through the period of intense competition of the last few years. The association approved the appointment of a judiciary committee of five members whose duty it shall be to consider infractions of the rules of business conduct which the association has set for its members and to take adequate action when such methods are persisted in.

Measuring of Plant Capacities

Following recommendations made by the committee on plant capacity, the association took steps to carry out methods of arriving at a capacity base for the machine tool industry by which figures of current activity

A Plea for Better Business Conduct

IN recommending for adoption the code of business ethics, the code committee, headed by H. M. Lucas, the new president, made this plea for better business conduct:

Both political peace and peace in industry are recognized as being necessarily based on the same fundamental ethical principle of doing unto others as we would have them do unto ourselves.

On this principle alone can lasting peace ever come to nations, to industries, to individuals. The recognition of this principle in business has changed the aspects of competition in the last 25 years in the United States. In days not long passed business men were often actuated by purposes of mutual destruction. In this generation men recognize that stability of business and prosperity of industry rest safely on mutual good will and respect for the rights and dignity of others and not upon cut-throat competition. This recognition is manifested in the growing number of

codes of ethical standards being formulated for one industry after another. Each code adopted carries to the participants in another industry the message of peace for which they all long. Every meeting that discusses these principles or makes a plea for their recognition marks another step toward the achievement of good relations that benefit buyers, sellers and employees.

The cynic on the side lines still says that it is mere gesture, mere empty sound of voices crying in the wilderness. But the cynic overlooks the fact that it is a constantly swelling chorus of voices taking up the cry for better standards of business conduct. The cynic fails to see the plentiful signs that the cry is being heeded, that the business world has listened to the cry, and that no voice of any authority or standing or respect is protesting.



H. M. LUCAS
ELECTED PRESIDENT

may be dependably measured. In this way, it was argued, the monthly barometric figures of the association would have much greater value. Two methods for arriving at capacity of machine tool plants were suggested. The first is an industry capacity based on the dollars of product, irrespective of types of machines, that can be manufactured in any given month if the plant were busy 8 hr. per day for 25 days. The other method is a group capacity base for each type of machine so that sales may be properly grouped in the association's records. Ques-

tionnaires are to be mailed to all members shortly seeking the desired information on both classifications of capacity.

The machine tool builders were welcomed to Washington by Elliot H. Goodwin, resident vice-president of the Chamber of Commerce of the United States, and by E. W. McCullough, manager of the department of manufacture of the chamber. Mr. McCullough, who has had a large experience in association activities, said that in his opinion the recent Supreme Court decisions on trade associations have given these organizations an opportunity to do more constructive work than ever before. They are on a better basis with the Government, he said, and should accomplish much good for themselves and the industries they represent if they keep within the bounds which the Supreme Court has now prescribed.

"It needs no high-priced lawyer nor a Supreme Court to tell business men that what is morally wrong is nearly always legally wrong," said Mr. McCullough.

Business Conditions Good in Machine Tool Industry

REPORTS of the retiring president, O. B. Iles, and of the association's general manager, E. F. Du Brul, brimmed with more optimism than has been exhibited at a machine tool convention in years. Both reports dealt largely with marketing conditions. Mr. Iles said in part:

"After five years of very unsatisfactory business in the machine tool industry for many of us, the outlook seems to be brighter. Basic conditions generally are good. The after effects of the World War seem to be straightening and righting themselves. Many of the bad conditions generally seem to be gradually disappearing.

"We must get before the buying public the fact that when it is dealing with one of our members it is dealing with an honorable, efficient, and fair business man, who wants only a fair and reasonable profit, considering the product furnished and services rendered. Then membership in this organization will be of inestimable value, not only to the member but to the buyers and users of machine tools.

"We understand that during the last few years there has not been business enough to take care of all the capacity of all our shops. There are too many machine tool makers for the demand at most times. This condition creates anxiety that sometimes leads to bad business methods. If this organization can do anything to call attention to new fields where more demand may be created for machine tools, it wants to do so, and thus reduce the incentive to try cut-throat methods."

Further Business Improvement Expected

"To the extent that our barometer curve reflects actual conditions," said Mr. Du Brul, "it would appear that the new orders in the industry are now very close to the level reached in the spring of 1923. Judging from general business sentiment we are justified in entertaining hopes that further improvement will be seen. But it is desirable for the machine tool builder to give close study to the business factors that will surely affect the rate of demand for machine tools from now on.

"It has been pointed out by good analysts that much of the present prosperity of the country is due to the continued building construction. The building industry is extremely active; in fact, in many cases it would seem to be too active for that industry's real good. This construction has distributed much purchasing power that seems due to fall off. That will have a material effect on the general demand for consumer goods and our industry should therefore watch this building demand as a forecaster of the demand for machine tools.

"The automobile industry, the main source of de-

mand at present for machine tools, will also bear considerable watching. There are many automobile companies whose equipment is far from up-to-date and they should therefore furnish a very good market for replacement of obsolete and worn-out machinery. But it is human nature that even necessary replacements are not freely purchased when the demand for the product of the machines shows any sign of slackening. When business slumps the less efficient machines are simply not used. The production load is taken by the efficient machines already installed and the owner waits for the next wave of demand before replacing the old machines.

"So many automobiles have been sold on credit that a recession in general prosperity such as might come from a recession in building seems likely to reduce the demand for automobiles. Therefore it is wise to be ready for a recession in machine tool demand from the automobile companies and not to count too strongly on its continuance.

"Another factor that will bear watching is the credit situation. The Federal Reserve banks are now being called on for accommodations in increasing amount. This shows that the member banks have reached the loaning limit of their own assets. It is perfectly right under those circumstances that the reserve banks should be called on for extensions of credit. That is precisely the function of the Federal Reserve Bank. But the point to watch is whether this extension is proceeding so rapidly as to indicate injudicious booming of business.

"Some analysts seems to think that the lessons of 1920 and 1921 have persisted in all cases, or at least in enough cases to make a general repetition of the post-war boom an impossibility. It is true that there are many more men thinking about fundamental conditions now than there were in 1919 and 1920. But when we look at the stock market and see the extraordinary amount of wild speculation, the booming of prices far beyond earning capacities, we may well believe that many men at the present time, as in the past, have forgotten the lessons of five years ago.

The Industry and Its Customers

"Many things crop up to confirm our belief that many important customers of the machine tool industry need enlightenment on the industry's problems. The latest example was given in a paper prepared for the production meeting of the Society of Automotive Engineers in Cleveland, on Sept. 15 of this year. The paper was read by a production executive of a reputable motor car and truck manufacturer. But it made many erroneous statements that the writer seemed to think were beyond dispute. His mental attitude toward our industry is not uncommon. To show some of the

fallacious ideas of such men, I quote some of his statements made in all seriousness:

Single purpose machines are economical only when production is reckoned in thousands per week.

There has been too much attention paid by the machine tool industry to single purpose machines, as there is a real demand for multi-purpose machines, particularly for the small shops numbering 70,000 in this country.

A complete lack of cooperation prevails inside the tool industry. Tool builders do not open their shops to each other as automobile men do.

The cooperative spirit does not exist in the machine tool industry.

The automotive industry spends millions yearly in designing and experimenting; the machine tool industry spends practically nothing.

"Of course these utterly erroneous and untrue statements were challenged and disapproved by some of the few members of our industry present at the session. But just such statements show that this industry is not understood by its customers, who are so largely dependent on it. We must find ways to get these customers into a more friendly attitude.

"The salesman and demonstrator on the firing line can be trained to combat such notions. The executive at the plant should take steps to get better acquainted with the men who buy tools. As false notions gain currency, they are detrimental to our industry and increase the cost of selling, because they create ill-will, rather than good-will toward the industry. We ought to have a good representation by executives of our member companies at such meetings as the production section of the S. A. E. By taking part in discussion and making the acquaintance of the automobile industry's production men, the machine tool men will be in position to correct such fallacies as now prevail regarding the part being played by our industry in social progress.

Machine Tool Expositions

"This year our industry did itself proud in the expositions at New Haven and Cleveland in September. Both shows were good shows, the Cleveland show naturally being the larger because of the favorable combination of circumstances. The show was held in a region producing many machine tool orders. It was held in connection with the production meeting of the Society of Automotive Engineers, which brought many

executives from the automotive industry. It gave them a chance to see what the machine tool builder had done in the last two or three years in the way of development of its product. The New Haven show performed the same function, although it was smaller in extent, and appealed to a less active class of buyers.

"Just because these shows were successful and profitable it would be poor logic to conclude that an excessive number of shows in the year 1926 would be equally successful and profitable. There is such a thing as overdoing the exposition business, as the machine tool industry did in 1924. In that year members exhibited in three shows, two of them in New England, and one at Atlantic City, all within a very short radius. This year it was better, with only one show held in the East, and one in the central West. It seems to me that the New Haven show should be held only in odd years, alternating with the Atlantic City Master Mechanics' show. Between these two, the Eastern machine tool-using region would be covered as well as needed. Our industry ought to work out a policy to exhibit at not more than two shows in a year, and never to exhibit in two shows in the same region in the same year."

Mr. Du Brul made a strong plea for the standardization of tool holding and work holding elements in machine tools; he also argued in favor of the standardization of trade descriptions of machine tools, favored the elimination of many unnecessary sizes of certain machine tools and recommended cooperative effort on the part of the association in the standardization of parts and in research work of benefit to the entire industry and its customers. Much research work is now done by individual manufacturers of tools, but Mr. Du Brul suggested cooperation with such institutions as the Carnegie and Mellon organizations.

He reported the next membership list of the association as 109, commenting on the fact that several consolidations and liquidation of some companies have reduced the number of machine tool manufacturers in the country.

The death of two members since the last meeting was referred to and appropriate resolutions were subsequently adopted to send to the families and business associations of the deceased, A. J. Jones of the Acme Machinery Co., Cleveland, and B. M. W. Hanson of the Hanson-Whitney Machine Co., Hartford, Conn.

Advertising and Marketing of Machine Tools

EFFORTS of the association to carry on an advertising campaign have been successful, according to the report of the advertising committee, of which F. B. Heitkamp, Cincinnati Milling Machine Co., is chairman. Special "keynote" appeals have appeared in a number of the trade journals reaching users of tools, some of the space having been donated by the trade journals while other space has been contributed by individual members and paid for by them. At the Buffalo convention last spring the committee was voted \$400 with which it prepared 40 pieces of advertising copy, and it was stated that the results of this publicity have been very gratifying.

Some of the trade journals, it was pointed out, have helped in the campaign by printing editorials and articles dealing with such subjects as the replacing of obsolete machines with modern equipment. Some of the advertisements used in trade journals have been reprinted in pamphlet form and distributed to members.

At the Buffalo convention four questions relating to advertising were presented to the advertising committee and these questions were answered in the report as follows:

Question No. 1—"What trade papers are most widely read by the men who influence the purchase of machine tools?"

Answer: It is the opinion of the Association Advertising Committee that sufficient data already is available in the form of ABC statements, Research Reports by investigators such as Ernst & Ernst, and also data submitted by the various trade journals themselves to permit the various members to arrive at their own conclusions concerning which trade

papers are most widely read by the men who most widely influence the purchase of machine tools.

Question No. 2—"Is the size of the advertising display a factor in creating interest? That is, is there any advantage in two pages as against one page, and one page as against one-half page?"

Answer: Size of advertising display is a factor in creating interest.

Question No. 3—"What kind of material is most interesting and valuable in advertisements that would appeal most to men who influence the purchase of machine tools? By kind of material we refer to production records, details of design, details of operation, history of development of various models, advertising changes and improvements, and so on."

Answer: By referring to researches made by THE IRON AGE, *American Machinist*, *Automotive Industries*, it is possible to arrive at a definite understanding of what material is most interesting and valuable in machine tool advertisements.

Question No. 4—"What is the value of direct mail advertising?"

Answer: On this point the committee thought it advisable to have a special investigation carried on and we are pleased to announce the acceptance by George Erwin of the Kearney & Trecker Corporation as chairman of a sub-committee to report on the value of direct mail advertising in the machine tool industry.

One of the ways in which the industry may obtain considerable benefit, it was stated, is by the delivering of addresses by machine tool builders at such conventions as those held by the Society of Automotive Engineers, American Society of Mechanical Engineers, American Foundrymen's Association, American Society for Steel Treating and also at meetings of railroad men, bankers, credit men, sales executives, etc. The committee reported that it was difficult to obtain speakers from the industry, but efforts are being continued in that direction.

The committee recommended the elimination of what it termed "outlaw advertising," referring particularly to those publications in which there is no possibility of obtaining adequate return. The committee recommended the adoption of a resolution defining the policy of the association with respect to legitimate and so-called illegitimate advertising. Legitimate advertising was defined by the committee report as including "regularly published trade publications which have a representative circulation in our potential markets." All others, it was stated, should be excluded as illegitimate and appeals for advertisements which are merely contributions to some cause should go through the executive offices and not through the advertising departments. It was the sense of the asso-

will come near to the point of doing what I want you to do; 30 per cent will only glance at the first paragraph, and 50 per cent will pay no attention whatever to the letter.

"The mere application of direct mail is not a panacea for all business ills. Unless you put the same care and thought into it as you do into the design and construction of your lathe, or shaper, or milling machine, you cannot even hope for results.

"First in importance comes the appeal. To be most effective, your circulars, bulletins, broadsides, letters, or whatnot you send out, should appeal to: Profit, Usefulness, or Pride. Then there is the mechanical work of direct mail advertising. The mailing list must be a list of prospects. Every name that isn't a pros-

Schedule to Follow in Training Salesmen

THE committee on training of salesmen of the National Machine Tool Builders' Association recommended that each member of the association adopt a course of training which will include as nearly as possible the following principles:

1. Development of sales ability:
 - (a) Analysis of prospect
 - (b) Selling power of proper presentation
 - (c) Importance of complying with selling system
 - (d) Salesmen's reports
 - (e) Punctuality in appointments
 - (f) Persistency in calls
 - (g) Honesty in representing product
 - (h) Importance of approach
 - (i) Ability to think and relate thoughts
 - (j) Analysis of territory
 - (k) Conservation of time
 - (l) Value of knowing when to stop talking
 - (m) Unqualified belief in product
2. Development of knowledge of product:
 - (a) Experience by actually having made or used product
 - (b) Technical points of advantages in product
 - (c) Salient features which can be based on engineering principles or technical features
 - (d) To convincingly and simply present the product
 - (e) History of product
 - (f) Knowledge of raw materials used
 - (g) Knowledge of physical capacity of plant
 - (h) Knowledge of factors that influence delivery
 - (i) Knowledge of usefulness of product
 - (j) Knowledge of productability of product
3. Familiarity with company's policies:
 - (a) Standard of ethics
4. Familiarity with finance:
 - (a) Knowledge of terms of sale
 - (b) Familiarity with market conditions
 - (c) Close study and analysis of company's statistics
 - (d) How to read signs in market
 - (e) Peculiarities of others in financing sales
 - (f) Familiarity with instruments of credit, such as drafts, notes, chattel mortgages, acceptances, shipping documents, etc.
5. Development of personality:
 - (a) Personal magnetism
 - (b) Power of speech
 - (c) Quick thinking
 - (d) Analyzing prospect
 - (e) Habits of action
 - (f) Truthfulness, punctuality, neatness
 - (g) Attention to business
 - (h) Reliability
 - (i) Attitude toward competitors
 - (j) Self-confidence

ciation, as developed later by discussion, that the recommendation of the advertising committee in this regard should be carried out.

George Erwin, sales manager Kearney & Trecker Corporation, Milwaukee, read a paper on direct mail advertising, from which the following paragraphs are quoted:

"I am not here to boost the direct mail as against any other form of advertising, because they are all good. Direct mail and trade paper advertising are as necessary to the successful merchandising of machine tools as your catalog or your salesmen. They all go hand in hand and each one has its place.

"The Kearney & Trecker Corporation advertises in several of the trade papers and always will. The trade papers are, as they properly should be considered, the backbone of our advertising endeavors.

"For reaching a special class, where you know the names and addresses of your prospects, there is no better method than direct mail advertising. For example, I can take the names and addresses of approximately fifty business men listening to me, go back to Milwaukee and address each one of you a letter. Here is the bad thing about it. If I write you an average letter, the kind of a letter that is being written by the average American business firm today, 5 per cent of you will do what I want you to do; 15 per cent of you

pect is a loss. Every duplication is a loss. A reasonable estimate for a year's mailing to a prospect is \$1 per name. If you have a mailing list of 10,000 prospects, and 2000 of them are 'driftwood,' you are deliberately throwing away \$2,000 a year.

"If you could afford all the salesmen needed to thoroughly canvass the entire United States, you wouldn't have to advertise, because the highest form of salesmanship is where you or I go to the prospect's office, look him straight in the eye, and get his order! But salesmen cost money. And besides, they have traveling expenses. So we say, use the trade papers and use direct mail for the simple reason that the cost of using personal salesmanship exclusively is prohibitive.

"When you hire a salesman you buy his time. Then he starts using your time, describing your firm, and describing your product, to men who know very little about you. Instead of this time-consuming, expensive process, keep your salesman busy answering inquiries secured through your advertising. They should concentrate on closing rather than calling. Let your advertising do the telling, and your salesman the selling."

New Classification of Machine Tools

In a report of a special committee appointed to suggest ways of cooperating with the Department of Commerce in the various undertakings of that Govern-

ment organization, it was recommended that the Government devise a new classification of machine tools for census and export statistics which will particularize more than the present reports do. Members were requested to instruct their billing departments to give

more exact nomenclature in making out shippers' export declarations. A reclassification of power-driven machine tools for statistical purposes was recommended, but this is subject to such modifications as various machine tool makers may suggest.

Development of Export Trade in Machine Tools

THE wealth of information and help available to American manufacturers interested in export trade from the Bureau of Foreign and Domestic Commerce was made evident at a meeting of the tool builders held Tuesday morning at the Department of Commerce Building.

Secretary of Commerce Herbert Hoover and several of his aides told of the many ways in which the department is trying to be of help to American business.

"We are trying to demonstrate," said Mr. Hoover, "that the Government has a function other than that of regulation and oppression." He regarded the aim of the United States in export trade to sell those things which can be made most successfully here by mass production, rather than to cater to the idiosyncrasies of individual countries or peoples.

He touched on various phases of the work of the department, and among other things mentioned the success that has been met with in disentangling the Patent Office congestion since that bureau was moved from the Department of Interior to the Department of Commerce. At the time of the removal the Patent Office was so far behind in its work that it required 18 months before an application for a patent could receive attention. By Jan. 1, 1926, the work will have been caught up so that patent applications will receive immediate attention, Mr. Hoover said.

He referred to what is now being accomplished in the simplification and standardization of Federal specifications, and said that this would work a great saving both to the Government and to manufacturers supplying Government requirements. In some cases there were 20 or 30 different Government specifications for an article where one will now serve. Purchasing agents of State institutions have agreed to adopt the Government specifications and the department has also received assurance from many private corporations that they will follow the same specifications. All this will have a tendency to aid in the work of the Division of Simplified Practice, which is endeavoring to eliminate unnecessary sizes and styles.

International Conference on Patents

Mr. Hoover spoke of the conference at The Hague which has been called to bring about international agreement on patent and trademark laws, referring specifically to the laws in some other countries which make it necessary for American manufacturers to produce continuously there if they would protect their patents and trademarks from appropriation. This, he said, is an injustice to American manufacturers, as this country exacts no similar penalty in the case of foreign patents. Unless an agreement is reached that is satisfactory to this country Congress may be asked to enact retaliatory legislation which will give foreign patentees no rights which our nationals do not receive in other countries. Mr. Hoover, however, expressed himself as very hopeful for an international agreement that will fully protect Americans.

He described the boom and the slump in business and industry as "the worst blight on our economic system" and he said that much of the statistical work of the department is directed toward the elimination of such ups and downs in so far as may be possible. Both booms and slumps, he said, are due to collective bad judgment and he thought that more statistical information and more intensive study of statistics by business men will have a tendency to create a greater degree of stability.

In the work of collecting trade statistics trade associations now have a freer hand, he said, due to the recent decisions of the United States Supreme Court. He said he saw no more reason for abolishing the gathering of trade statistics by trade associations,

merely because they have at times been used to control prices and production, than there would be in abolishing automobiles because bootleggers use them in their trade.

E. E. Hunt, assistant to Mr. Hoover, in a brief talk said that the Department now represents a splendid example of Government behind business.

America Becoming Efficient in Selling Abroad

Dr. Julius Klein, director Bureau of Foreign and Domestic Commerce, introduced his talk by saying that the United States, having attained a position of efficiency in production, is now getting to a place of efficiency in selling and distribution. He said that the bureau is swamped with requests for information from all American industries and that the number of "services" rendered by the bureau had grown from about 500,000 in 1922 to 2,000,000 in the last fiscal year. About 22,000 firms, corporations and individuals are now getting more or less regular service from the bureau.

"It was long supposed that we had much to learn from Europe in export trade," Dr. Klein said, "but that day is passed. After a visit of four months in Europe I concluded that the United States has nothing to be ashamed of. In fact European countries are taking leaves out of our experience. Everywhere we go in Europe we find copies of the bulletins of the Bureau of Foreign and Domestic Commerce and also copies of the leading American trade journals carefully marked for reading and study."

An amazing transformation is going on in all the countries of Europe, Dr. Klein found. There is a stiffening of national barriers, which has stimulated new industries under the influence of protective legislation. The expansion of industry in Italy and Spain was cited as an example of the change that has taken place. Italy has gone in for extensive hydroelectric development and Spain and other countries are trying to keep some of the war industries alive. Tariff barriers have been set up where none before existed and the Imperial preference movement is gaining headway in other countries as well as in Great Britain, where in a traditionally free trade country, some articles are now protected.

The notion that we cannot compete in Europe Dr. Klein described as "all poppycock." He cited the case of an American company which bid on a big job in Holland in competition with seven or eight European companies. The American bid was high, but because of the guarantee of service given by the American company it received the contract. Europe is tired of war substitution and frequently wants the best that money can buy. He said that Europe is recovering and will again be our best customer.

Dr. Klein said that the question is often asked as to the actual results produced by the work of the Bureau of Foreign and Domestic Commerce. In answer he said that a questionnaire recently sent out developed the fact that 173 companies had received a total of \$72,000,000 worth of business through information and help supplied by the bureau.

Commercial Intelligence Service

Arthur S. Hillyer, manager of the Commercial Intelligence Division, told of the varied kinds of information his division is prepared to furnish. Among these services he mentioned lists of companies or individuals abroad who are suitable representatives for American exporters and the giving of information and ratings on these companies. The division is also able to give information regarding agents abroad who have been guilty of disreputable practices. The advice of the division is available at all times and has frequently

been a check on mistakes which Americans engaging in foreign trade might make.

Clayton Lane, assistant chief of the European division, said that his division is prepared to advise on such matters as the economic conditions in European countries, including such information as relates to exchange and the factors influencing its fluctuations;



The Belemeter, the Newest Device Aiding Anti-Aircraft Guns to Locate the Target and Help to Obtain the Slant Range for the Guns. This Was Demonstrated at the Meeting at Aberdeen Last Week

labor and employment and wage rates; strikes and depressions in various industries which may affect demand for American products; purchasing power and status of demand among various peoples; standards of living in all countries as affecting various products; adaptability of any American product to the life of the country in which a market is sought; status of competition; public and private finance conditions; money markets; economic crises; living costs for Americans

abroad whether traveling or living in a foreign country; information on reparations and inter-allied debts; how efforts of Germany to "pay in kind" may affect certain products; also many other similar problems. The division is able to arrange itineraries for American business men who wish to survey foreign conditions for themselves.

Mr. Lane said that affairs in Europe are constantly changing and he cited the transfer of population in Poland and Greece as examples of how events of which many persons have only slight knowledge may influence our export trade in a very important way. The new nationalistic movement in Turkey, he said, is another case where conditions have changed vastly from those obtaining under the old Ottoman Empire.

Tariff Laws Affect Our Trade

Henry Chalmers, of the Division of Foreign Tariffs, gave many instances of the importance of an understanding of foreign import regulations before attempting to do export business. He said that in many countries American goods are entered with little tariff barrier, as comparatively few countries make the products in which the United States excels and our chief competition is with European manufacturing nations. New industries are being encouraged in many countries and the equipment for these industries is being admitted with little tariff restriction. Commercial treaties with many nations have enabled the United States to obtain as favorable terms for entry of our goods as the so-called "most favored nations" enjoy.

Goods going abroad must be declared in the exact terminology of the tariff laws of the country to which they are consigned; shipments should be packed in such a way as to become entitled to the lowest possible duty. This division is prepared to advise Americans of probable tariff changes in other countries; for example, about 10 countries to the south of us are now considering tariff changes, and the Japanese Diet will probably adopt some tariff restrictions in the spring.

Mr. Chalmers referred specifically to the mailing of heavy catalogs and said that many American companies had stirred up resentment abroad by sending large catalogs for which there had been no request. Some countries levy an import tax on catalogs and the recipient is obliged to pay a tax on something he may not want.

C. J. Junkin, of the Division of Commercial Laws, said that his division is equipped with information regarding patents and trademarks abroad, data pertaining to credits and general information as to the laws in foreign countries which affect the marketing of goods there. A new section of this division will be devoted to commercial arbitration of international trade disputes.

Machine Tools and Munitions Program

A VISIT to the Aberdeen Proving Ground on Friday, together with a paper read before the convention on "Machine Tools and the Munitions Program" by Major R. H. Somers, Ordnance Department, U. S. A., gave the machine tool builders a word picture and an ocular demonstration of the possible requirements of our Government in the event of another war.

Major Somers' paper, which dealt largely with the "Basis Mobilization Plan" of the General Staff, particularly as it may affect the machine tool and munitions manufacturers, will have to await publication in a subsequent issue of THE IRON AGE.

Some of the developments in artillery and allied war equipment which have been brought about since the World War were demonstrated at the all-day show at the Aberdeen Proving Ground. Starting with an exhibition of anti-aircraft guns firing at a target towed by an airplane and continuing until dark, when night firing and pyrotechnic displays were shown, the efforts of the Ordnance Department, assisted by the Bureau of Aeronautics, U. S. N.; the Chemical Warfare Service; the Field Artillery and other branches, were thrilling to a crowd of visitors, numbering about a thousand, among these being members of the Army

Ordnance Association, the National Aeronautic Association, the Franklin Institute and the National Machine Tool Builders' Association.

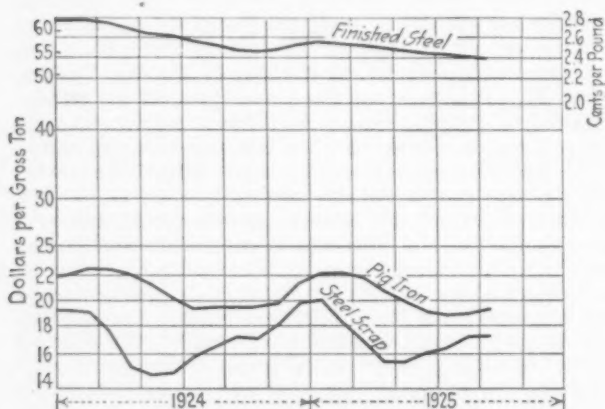
There were demonstrations of the firing of 14-in. and 16-in. coast defense guns, having a range, respectively, of 10 and 30 miles; smaller artillery was also demonstrated, including machine guns of various types and 75 mm. and 155 mm. field pieces. Smoke screens were produced both by airplanes and trench mortars; bombs were dropped from airplanes; tanks, caterpillars and service automobiles were shown in action; there was a parachute jump by two service men from a moving airplane; the Sixth Field Artillery from Fort Hoyle, Md., gave a wonderful spectacle which closely resembled the thrill of battle without the horror. There were also exhibits of various kinds of equipment and the work of repair shops was shown.

Among several addresses to the visitors was one by O. B. Iles, retiring president of the National Machine Tool Builders' Association, in which he offered the services of members in experimental work or other developments in which the Ordnance Department or any other branch of our defense organizations may be interested.

THE IRON AGE COMPOSITE

Monthly Averages, Including Those for Heavy Melting Steel Scrap

In the diagram and in the table are shown the composite prices for finished steel and for pig iron averaged monthly from the beginning of 1924. With them are carried a curve and set of figures for the composite price of heavy melting steel scrap, also monthly. The diagram is drawn on the ratio scale, hence equal vertical differences represent proportionate price changes. The relative stability of finished steel, when compared with the two other products, is striking.



THE IRON AGE Composite Prices
(Monthly Averages)

	Finished Steel* C. per Lb.	Pig Iron† Per Gross Ton	Steel Scrap‡ Per Gross Ton
January, 1924.....	2.783	\$22.15	\$19.09
February	2.782	22.84	19.05
March	2.746	22.81	17.56
April	2.692	22.31	15.20
May	2.639	21.40	14.71
June	2.610	20.27	14.88
July	2.563	19.31	15.93
August	2.615	19.40	16.58
September	2.487	19.46	17.20
October	2.464	19.46	17.09
November	2.481	19.79	18.17
December, 1924....	2.540	21.60	19.96
Year's average....	2.608	20.90	17.12
January, 1925.....	2.560	22.44	20.10
February	2.546	22.50	18.27
March	2.537	21.99	16.92
April	2.503	20.95	15.48
May	2.460	19.85	15.46
June	2.440	19.22	16.09
July	2.435	18.96	16.46
August	2.413	19.01	17.23
September	2.396	19.38	17.38
9-month average..	.....	.....	.....

*Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

†Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

‡Based on average of heavy melting steel at Chicago, Pittsburgh and Philadelphia.

Steel Fabricators to Meet at White Sulphur Springs

The annual convention of the American Institute of Steel Construction will be held at the Greenbrier, White Sulphur Springs, W. Va., Nov. 11-14. The program will open Wednesday morning, Nov. 11, with addresses by C. Edwin Michael, president Virginia Bridge & Iron Co., Roanoke, Va., and J. L. Kimbrough, president of the institute. Reports of the various committees will be heard and the following papers will be presented Thursday:

Fireproofing of structural steel, B. C. Collier, president Cement Gun Co., Allentown, Pa.

Fabricating structural steel with the electric arc process, R. A. Storm, manager structural department Morgan Engineering Co., Alliance, Ohio.

An investigation to determine the causes of rivet failure, A. E. Spencer, Jr., Pittsburgh Screw & Bolt Co., Pittsburgh.

Structural steel in the earthquake zones, John L. Clymer, manager California Institute of Steel Construction, San Francisco.

Tests of I-beams encased in concrete, Prof. H. M. Mackay, dean faculty of applied sciences, McGill University, Montreal.

Need of further technical research in the structural steel industry, Prof. George F. Swain, Harvard University, Cambridge.

Apprenticeship systems in the building trades, H. A. Frommelt, consultant, Milwaukee.

At the annual banquet on Thursday night, Secretary of Commerce Herbert Hoover will probably deliver an address and other prominent speakers will include Franklin D. Roosevelt, president American Construction Council, Senator George H. Moses, of New Hampshire, ex-Governor Channing Cox, of Massachusetts and Fred C. Kelly, author, Washington.

On Friday Henry R. Brigham, chairman, housing committee, National Association of Real Estate Boards, Boston, will present a paper on more structural steel in farm buildings, residences, garages and apartment houses. H. A. Fitch, president Kansas City Structural Steel Co., Kansas City, will speak on Friday afternoon on the future of the structural steel industry. An elaborate program of entertainment has been prepared for those who attend.

Iron and Steel Institute to Meet Oct. 23

The twenty-eighth general meeting of the American Iron and Steel Institute will be held at the Hotel Commodore, New York, Friday, Oct. 23. The usual morning and afternoon sessions will be followed by a banquet in the evening. Following the opening address of the president, Judge Elbert H. Gary, a program of technical papers will be read, as follows:

Low Temperature Distillation of Coal.

M. W. Ditto, general manager Socony Burner Corporation, New York.

Silicon Steel.

Dr. W. E. Ruder, General Electric Co., Schenectady, N. Y.

Stainless Steel.

D. G. Clark, manager Firth-Sterling Steel Co., Pittsburgh.

Higher Temperatures and Better Economy in Use of Liquid Fuels.

Max Sklovsky, chief engineer Deere & Co., Moline, Ill.

Alloy Steels Up-to-Date.

F. E. Clark, sales engineer Republic Carbon Co., Niagara Falls, N. Y.

Manufacture and Use of Wrought Iron.

A. G. Smith, engineer of tests New York Central Railroad, New York.

Ely Process of Manufacturing Wrought Iron.

F. H. Dechant, William H. Dechant & Sons, Reading, Pa.

Rowe Process of Manufacturing Wrought Iron.

James P. Roe, Reading Iron Co., Reading, Pa.

Aston Process of Manufacturing Wrought Iron.

James Aston, chief metallurgist A. M. Byers Co., Pittsburgh.

Form Los Angeles Chapter of Welding Society

Organization of the Los Angeles chapter of the American Welding Society was completed at a meeting held Sept. 24, at Los Angeles. L. G. Hicks was elected chairman; F. S. Hatfield, vice-chairman, and L. R. Ardouin, secretary-treasurer. An executive committee consisting of the three officers and Barton Brown, Prof. R. L. Daugherty, Oscar Lund and A. Max Lee was also chosen.

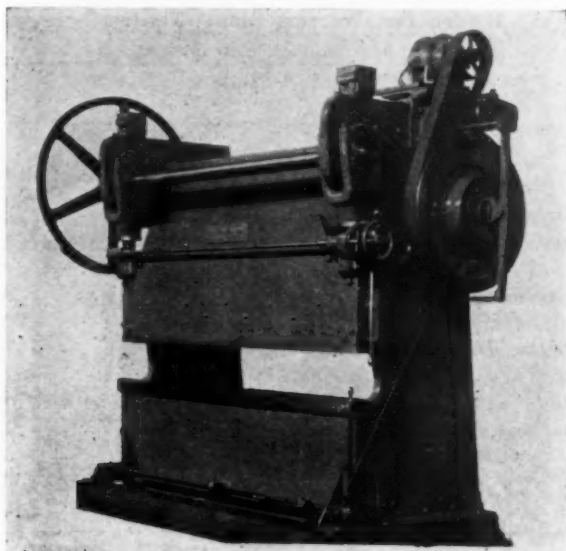
Addresses were made on "Welding Buildings" by A. W. Mullin of the Islands Welding & Supply Co., Honolulu; "Oil Field Welding" by S. A. Erwin, Union Oil Co.; "Repairing Boilers by Welding" by George P. Gorman, Standard Oil Co., and "Welding of Alloy Steels" by W. F. Stoodly of the Stoodly Welding Co., Whittier. The next meeting of the new Los Angeles Chapter will be held on the last Thursday in October.

PLATE STEEL PRESS BRAKE

Balanced Eccentric and Open Throat Are Features—Work Is Fed Straight Through

All-steel press brakes put on the market by the Cincinnati Shaper Co. now include a smaller press brake of the same type of construction. This is used for bending, forming, flanging, or punching sheet metal for a variety of work, such as metal office equipment, steel lockers, shelving, building trim, stairs, skylights and sash, and automobile and truck bodies. The line ranges upward from this to a size capable of bending $\frac{1}{2}$ -in. steel.

Advantages claimed for these steel brakes are lack of trouble from breakdowns. They are constructed of rolled steel plate with low working stresses. Further, they are said to eliminate deflection in securing perfect bends. They remove limitations on the width of material handled, by means of an open throat. While a radical departure from familiar types, there is no



Brake Does a Variety of Work, Including the Forming of Metal Office Equipment, Lockers, Shelving, Automobile Bodies

necessity to change the user's shop methods, but rather they may make these methods more productive.

Both housings are cut from 3-in. solid steel plate and finished to $2\frac{3}{4}$ in. Ram and bed of the machine, also, are cut from similar plate and have heavy angles welded on for additional stiffness. The top of the bed is made from a steel billet machined in the shape of a saddle and solidly welded to the main plate.

All gears, including the large one, are of steel, accurately cut for long life and quiet running. Double keys of the Kennedy type are used throughout. The screws are cut from high-carbon, high-nickel steel, with a buttress thread to do away with bursting effect on the connecting rods. A worm-and-wheel adjustment to the screw, operated either by hand or power, permits 5 in. movement. This adjustment and its power elevating device run in oil; all parts not protected in this manner are oiled automatically from two oiling stations on top of the housings.

Quick bearings for the ram or hammer, gibbed in both directions, provide for the thrust encountered in punching. The clutch is of multiple disk type, using special asbestos material on the friction surfaces. The flywheel is mounted on ball bearings, as are the idler pulley for the motor drive and the worm adjustment to the ram. All shaft bearings are bronze bushed.

By using a bifurcated connecting rod, as shown in the illustration, the eccentric is balanced, rather than overhung. This places the load concentrically and directly on the housing plate. The main bearing of the eccentric is therefore in the middle, rather than on the ends.

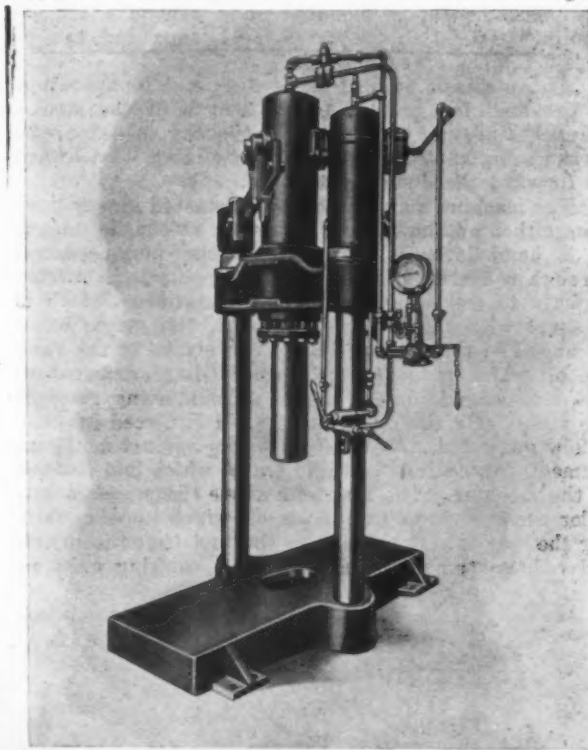
Control of the machine is either by foot treadle or hand lever, both of which can be moved, at the wish of the operator, to any position across the front of the machine. An efficient brake is provided to stop the machine immediately upon release of the clutch.

Known as the Cincinnati Series 70 all-steel press brake, this machine has a 3-in. stroke, 5-in. adjustment, and a throat clearance from the center of the dies of 8 in. It runs 30 strokes a minute. It can be furnished in any length from 4 ft. 6 in. to 10 ft. 6 in. between housings. The machine has capacity for making right-angle bends, continuously and at one stroke, in 10-gage steel 10 ft. long, over $1\frac{1}{4}$ -in. die, to a radius equal to the metal thickness. It is provided for either belt drive or arranged for motor drive, with motor mounted on top of housings. The machines are shipped assembled on skids, to avoid erection difficulties.

Economies in production are effected on this machine by feeding the work through the throat past the operators, instead of taking it to and from the machine through the operators. The rigidity of the bed assures work uniformly straight for the full length. This opens up opportunities for further economies in making more than one bend at a stroke. There is a clear and unencumbered floor space around the front, and also a clear working space in back, between the housings. This not only facilitates handling the material but also makes it possible and practical to use two or more operators, both in front and in rear, when the work justifies.

New Two-Rod Hydro-Pneumatic Forcing Press

A 100-ton hydro-pneumatic forcing press intended primarily for use in railroad and other large shops in forcing, pressing and bending operations is here illus-



100-Ton Press for Forcing, Pressing and Bending Operations

trated. The machine is of two-rod type having the ram movement from the top downward. The long bottom platen or base permits of many bending and straightening operations in addition to the rapid pressing in and out of bushings, driving box brasses and gears on and off of shafts. The ram movement is actuated by hydro-pneumatic force obtained by an air engine pump, which is designed to be connected to an air line and makes the press adaptable to any shop having air pressure. Valve control is simple and con-

venient, and a gage is furnished to indicate in tons the pressure being exerted by the ram.

The bottom platen is 72 in. long, is strongly proportioned and is provided with a hole in the center to receive shafts, etc. A jib crane is furnished to facilitate handling of the work in and out of the press. The machine is a recent addition to the line of the Watson-Stillman Co., 50 Church Street, New York.

Hydraulic Broaching Machine with Improved Features

High-speed return of the ram and the elimination of all piping with the exception of the high and low pressure pipes from the cylinder to the pump are among the improved features of the hydraulic broaching machine illustrated, which has been placed on the market by the J. N. Lapointe Co., New London, Conn. Flexibility is also a feature stressed, it being possible to stop the machine at any predetermined point, and automatic relief valves have been provided to prevent damage in case the operator should fail to tighten the knock-off dog.

On this machine the draw rod is moved by oil pressure acting against the piston of a cast iron cylinder. The cylinder, which is 8 in. in diameter, is mounted on the rear end of the machine bed and bolted at its forward end to a cross piece which is integral with the bed. At a pressure of 900 lb. per sq. in. a pull of 43,000 lb. is exerted at the draw rod, the pressure being supplied by a No. 5 variable speed multi-plunger hydraulic pump of the Waterbury Tool Co. The stroke of the draw rod is 64 in., and the speed may be regulated from 0 to 24 ft. per min. on the working stroke with a constant return speed of 60 ft. per min. Speed changes may be made while the machine is idle or in operation, and adjustment speed control to any predetermined rate may be made quickly. The speed control arrangement is mounted on a control shaft extending parallel to the cross head ways and can be locked for the speed desired.

An automatic stop of the spring and plunger type is provided for controlling the length of the stroke. Wrenches are not required for adjusting this stop, the stroke being varied conveniently by sliding it backward or forward the distance required.

The machine may be stopped or started in any position, either on the cutting or return stroke, by means of a hand lever which operates the pump control through a system of linkage. The pump is connected directly to an automatic valve arrangement which is integral with the pressure cylinder, this valve being arranged so that during the return stroke of the ram, the oil which produces the pressure is transferred to the opposite side of the piston without going through the pump. On the return stroke, oil is forced into the hollow draw rod and therefore works against a 2½ in. diameter, producing the rapid travel which is a feature of the machine. The reservoir above the pressure cylinder accommodates the excess oil which appears during the working stroke due to the fact that the piston rod reduces the total volume or the working area on

the forward side of the piston. Connections are arranged so that when the relief valves in the pump open under pressure they also exhaust into the reservoir, thus permitting the oil to remain in the system.

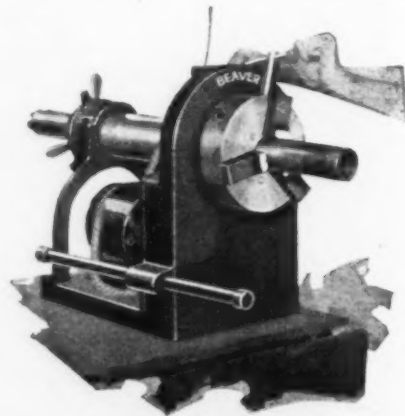
The system is filled through the reservoir, 24 gal. being required for filling. It is open to the atmosphere through the reservoir. This being the highest point, it eliminates accumulation of air in the system, the pressure of air causing difficulty.

The draw head or sliding head is fitted with bronze shoes, and the coolant capacity of the machine has been increased by the use of a geared pump. The coolant is applied to the broach both as it enters and leaves the work. The floor space occupied by the machine is 2 ft. 1 in. by 15 ft., and the weight is 7600 lb. For motor drive a 10 hp. motor is recommended.

Power Drive for Pipe Cutting and Threading

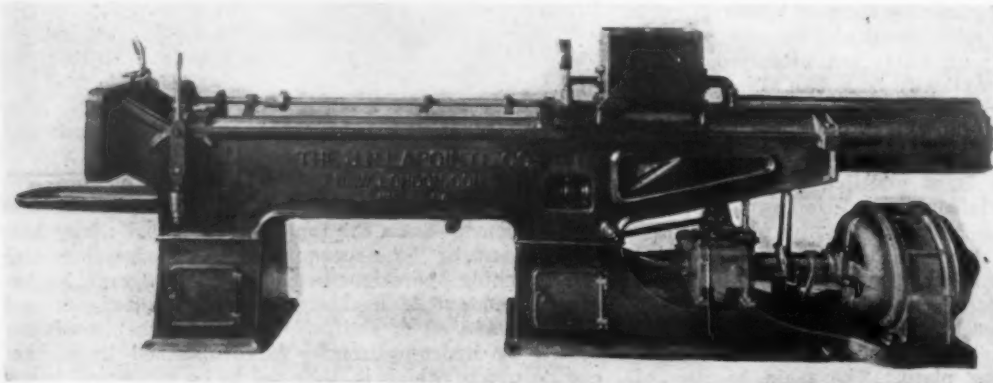
A portable power drive, No. 44 Beaver, which will cut and thread pipe, using any kind of hand-operated die stock or pipe cutter, has been put on the market by the Borden Co., Warren, Ohio. The machine cuts

*Machine
Drives Pipe
Against Fixed
Tools,
Providing a
Convenient
Power Drive
for Threading
and Cutting*



and threads ¼ to 2-in. pipe, the pipe being rotated while the tool stands still. For cutting and threading pipe up to 6 in., there is furnished a universal sliding extension shaft, which is used to operate geared die stocks or cutters. In this case the tools rotate and the pipe is stationary.

The operation of the machine is simple. The pipe is inserted and rigidly held by a universal chuck. The die stock or pipe cutter is placed on the pipe as when cutting or threading by hand. The handle of the tool rests on a sliding bar at the side of the machine. When the current is turned on the pipe revolves while the tools stand still. By using any type or kind of die stock or pipe cutter this power drive virtually makes power machines of hand-operated tools. It is also used to make up fittings right in the machine, instead of by hand,



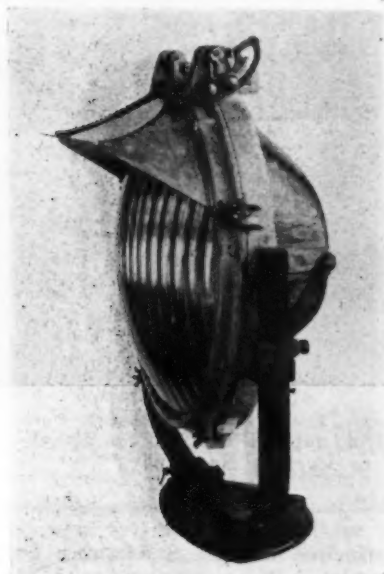
*Wide Range of
Cutting Speeds
and Fast Return,
60 Ft. Per Min.,
Are Features.
All Piping
Except High
Pressure Line
From Cylinder to
Pump, Has Been
Eliminated*

thus permitting cutting, threading and fitting without removing the pipe from the machine.

No. 44 Beaver power drive is easily portable, weighing only 230 lb. It is regularly equipped with a $\frac{1}{2}$ -hp. heavy duty, 110-220 volt, a. c., 60-cycle, single-phase motor and is operated from an ordinary light socket. Special motor equipment is available for localities where standard equipment cannot be used.

Floodlight Projector Requiring No Ventilation

A departure from conventional floodlight design is represented by Type 2375 projector now manufactured by the Pyle-National Co., 1334 North Kostor Avenue, Chicago. Ventilation has been entirely dispensed with and the cast aluminum alloy case has been made a tight enclosure by machining the surfaces at the door joint and by the use of a soft lead packing ring. The principal causes of depreciation in reflective values and of lamp failures are eliminated, it is said, since dust, gases, moisture, and insects are entirely excluded from the interior of the unit. Ventilation is unnecessary in this new design because the radiating surface is sufficient to insure safe interior temperatures for



Floodlight Projector Equipped with Rectangular Divergence Lens and a Visor

the glass reflector and lamp when using 1000 and 1500-watt lamps.

The case is an aluminum alloy casting, with a drawn aluminum back, and fittings and small parts are of aluminum or bronze. The mounting base and trunnions are provided with locking devices so that adjustment of the unit is not disturbed by the maintainer. Focusing is from the outside of the case. Pyle-National "nonglare," or crystal, glass reflectors, 28 in. in diameter, are used.

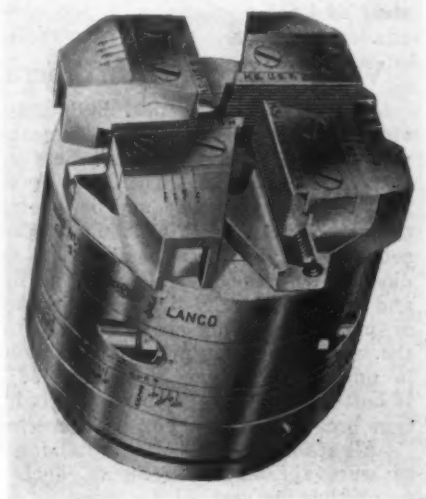
New Thread-Cutting Die Head

A new series of Landis thread-cutting die heads has been placed on the market by the Landis Machine Co., Waynesboro, Pa. This new head, known as the "Lanco" head, has the chasers supported on its front face. This permits of easy access to the chasers when it is necessary to remove them for grinding and when changing from one pitch to another. This new head is made entirely of high carbon steel and it is heat treated throughout, and ground. This construction together with the compact design of the head, it is said, reduces the wear to a minimum and prolongs the life.

The head is adjusted to size by means of an adjusting worm, which is under the proper turning tension at all times, thereby eliminating the necessity of locking it for each adjustment of the die head for

size. A graduated dial at the end of the adjusting worm gives a variation in adjustment of approximately .005 in. for each graduation. The head, when threading, is locked within itself by the engagement of two closing pins in hardened bushings. It is opened and closed automatically.

Supported on the Front Face of the Die Head, the Chasers Are Easily Removed for Grinding or When Changing From One Pitch to Another



The head is graduated for all sizes of bolts, both right and left hand, and right hand pipe within its range. All passages and openings into the interior of the head are entirely covered under service conditions, to keep out dirt and chips. The Lanco head is made in the $\frac{3}{8}$, $\frac{9}{16}$, $\frac{1}{4}$, 1 and $1\frac{1}{2}$ in. sizes. It is applicable to all makes of automatic, semi-automatic and hand-operated threading machines. The Lanco head employs the Landis long life chaser.

One-Man Bag for Handling Materials

A bag of webbing and canvas which is stiff enough to stand alone as firmly as a box or can and remain

open while being loaded, has been put on sale by the L. H. Gilmer Co., Philadelphia. The bag is strong enough to permit of its being dragged over rough ground when filled with rock, coke or metal objects and at the same time is collapsible so as to be readily stored. Devised to meet the requirements of a large eastern railroad for a bag for handling track ballast, it has been thoroughly tested as to practicability and durability in the hardest kind of maintenance-of-way work, replacing the wooden boxes and metal cans which had been used previously.

The fact that the bag stands upright and stays open makes it possible for one man to handle it in loading. No helper is required to hold the bag open. The bag is sufficiently rigid so that the loaded bags can be transported on trucks or flat cars without the contents spilling.

The bottom of the bag is of heavy, closely woven, two-ply cotton belting stock, cupped in a form so



A Canvas Bag Stiff Enough to Stand Alone, Devised to Replace Cans and Boxes for Handling Materials

as to leave no seams, joints or rough spots to come in contact with obstacles over which the bag may be dragged. The side wall is of heavy canvas and the junction of the side and bottom is protected by a strip of belting stock. Another piece of belting stock is put around the top to protect the edge and hold the bag open. There are two handles at the top and two at the bottom. These are strongly secured. The entire bag is treated with a preparation to preserve it from wear and rot.

Vertical Press with Liberal Die Space

A heavy duty, vertical bulldozer designed to provide a clear working space over the table has been placed on the market by the Beatty Machine & Mfg. Co., Hammond, Ind. The ram, or cross-head, travels in a vertical position and is centrally located over the work table, enabling the operator to place all die set-ups in a balanced position. T-slots for attaching dies are provided the full length of both the cross-head and the table. The die space is such that when two or more operations are necessary to bend and finish the work, tools permitting the completion of the work in one handling can be assembled on the machine. If hot work is being performed this is a decided advantage because material can be completed in one heat.

All standard sizes of this bulldozer can be modified to meet special requirements, such as increasing or decreasing the vertical die space, or changing the width and length of the working table and cross-head.

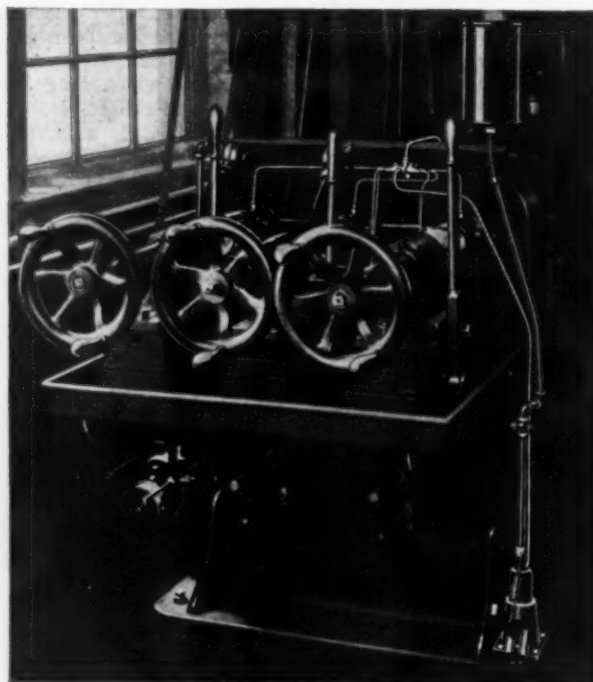
Intermediate gears are semi-steel and the main gears and all pinions are steel with teeth cut from solid blanks. The ram is a semi-steel casting which extends through the housings. It is provided with an extra large bearing surface for slides and is fitted with bronze taper gibs for taking up wear. The operator can quickly change and adjust die set-ups by means of the vertical adjustment of the ram. The connecting rods to cross-heads are made of cast steel with the crank pin cast solid on the main gear. The yoke, which forms the vertical adjustment to the ram, is of forged steel. These parts, together with the main driving gears, are located in a closed housing, thus eliminating the possibility of work coming in contact with the driving mechanism. Double friction clutches are furnished as standard equipment. This permits the operator to stop or reverse the cross-head at any point in its stroke. With the movement of the cross-head under control, the operator need use only such portion of the stroke as is necessary to do the work. These bulldozers are also fitted with air cylinders for counterbalancing the weight of the ram. If an air line is not available, a separate unit, consisting of a storage tank and a small compressor can be supplied with the machine.

These machines can be obtained in capacities of 100, 150 and 350 tons. The distance between housings

ranges from 8 ft. 2 in. to 10 ft. 6 in. The floor space occupied by the smaller machines is approximately 14 ft. x 9 ft. 9 in. and by the 150-ton machine, 18 ft. x 10 ft. Shipping weights range from 30,000 to 114,000 lb.

Lubrication for Industrial Machines

Lubricating equipment on the Bowen system, for machines in industrial use, has been developed by the Bowen Products Corporation, Auburn, N. Y. It consists essentially in an elevated reservoir for oil, connected below with a foot pedal, which releases the flow of oil from the reservoir to the various bearings to be



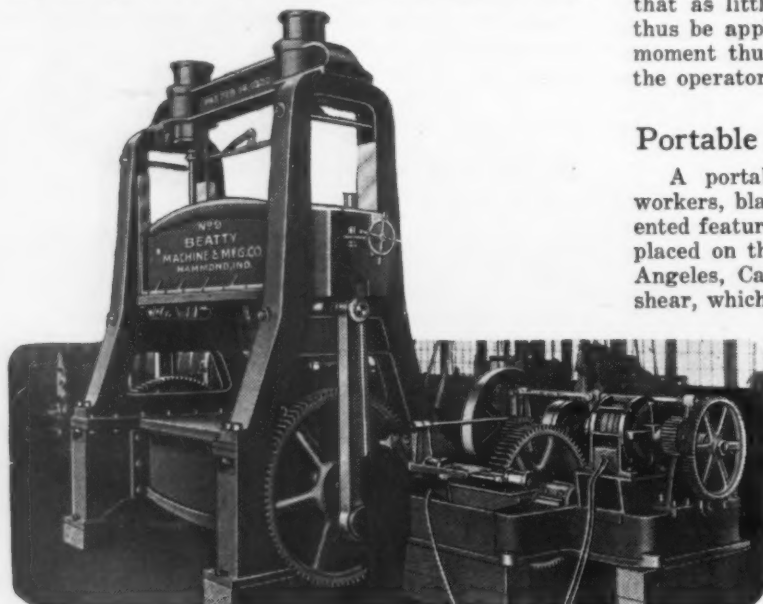
Oil Reservoir on Three-Spindle Machine Connects with Manifold from Which Oil Is Distributed to Various Bearings

lubricated. The principal advantage accruing from this system is the saving in time, compared with hand lubrication.

In the illustration the system is shown as applied to a three-spindle tapping machine. As will be noted, oil from the reservoir reaches a manifold, from which it is distributed to the various bearings. It is obvious that as little or as much oil as may be desired may thus be applied to the bearings, and the needs of the moment thus cared for according to the judgment of the operator.

Portable Shear for Sheet Metal Workers

A portable shear for iron workers, sheet metal workers, blacksmiths, tin and copper smiths, with patented features utilizing the leverage principle, has been placed on the market by the Industrial Sales Co., Los Angeles, Cal. J. C. Scoggins is the inventor of the shear, which weighs only 11 lb. and cuts 7/16-in. round



A Bulldozer of 350 Tons Capacity Which Can Be Timed for Eight Strokes Per Minute.

iron (cold), $\frac{1}{4}$ -in. flat iron (cold), and splits a 3/16-in. sheet.

A feature is the arrangement for hinging the jaws so that the blades, which are detachable, cannot get out of alinement. It is made of cast steel, the upper jaw being pivoted on a broad lug which is integral with the steel lower jaw. A bolt through the center merely tightens the jaws and does not take the cutting strain. The blades are of tool steel.

From the center of the jaw lever to the back end of the jaw, the shear is $9\frac{1}{2}$ in.; from the bolt of the jaw lever to the strap at the back end it is 4 $\frac{1}{2}$ in. from



A Portable Shear with Patented Compound Levers Designed to Prevent the Jaws, Which Are Detachable, from Getting Out of Alinement

center to center. The lever handle is 2 in. from center to center and the handle is three feet in length. The design is said to be such that the steel is in tension and not compression. The shear can be operated by one man, the shear being said to have great cutting power with an easy pull, owing to patented compound levers. The shear may be mounted on a bench, the bottom lug being dropped into a hole bored for the purpose, or it may be mounted in the back end of a truck, or slipped into a vise or anvil socket.

Fire Test of Gasoline-Carrying Truck

Demonstrations of the fire safety of a 1500-gal. truck for carriage of gasoline were made Sept. 1 in Long Island City, N. Y., by the Columbian Steel Tank Co., Los Angeles, manufacturer of the truck. The truck contained six compartments, five of which were full of gasoline, while the other had a small quantity in it. The tank of the truck was subjected to the heat of a fire from a bale of excelsior saturated with 68 gal. of gasoline and 15 gal. of crank case oil.

After the fire was ignited it was permitted to burn itself completely out, which took 1 hr. 19 min. Gasoline was running from the 2-in. discharge of the tank when the fire was lighted, but the flow was shut off automatically by the heat. A certain amount of gasoline escaped from the bleeder valve of the discharge manifold, due to its expansion from the heat. Total loss by evaporation and by burning, as measured after the test, amounted to 58 gal. The test was witnessed by the New York Fire Commissioner, three fire chiefs and the chief engineer of the department, as well as representatives of the fire underwriters and other interested parties.

Master Specifications for Builders' Hardware

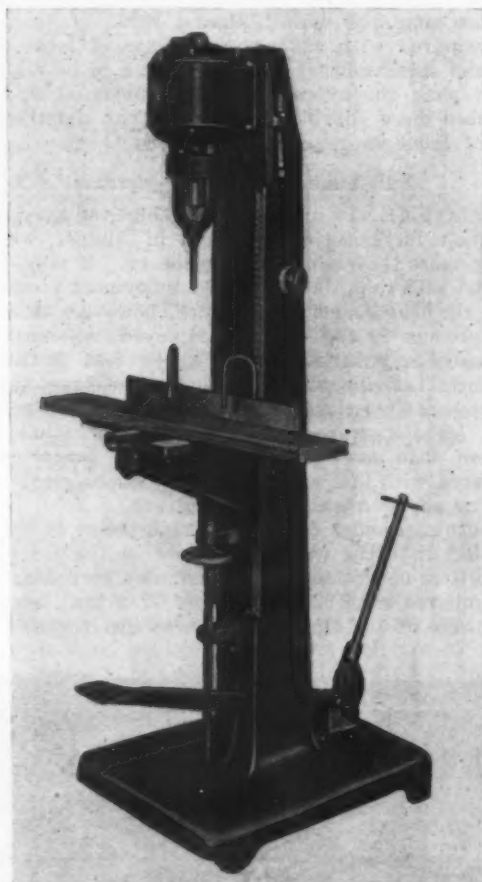
Circular No. 275 of the Bureau of Standards deals with builders' hardware, except for marine use or for hollow metal doors and covers United States Government Master Specification No. 336. The date upon which this specification becomes mandatory is Jan. 2 next.

Door locks and knobs, cabinet locks and pulls, bolts, hooks, hinges and butts, shelf and miscellaneous hardware are included. The various items are illustrated by sketches, while the specifications are terse, but apparently complete. An index closes the 47-page pamphlet. Copies of this can be obtained at 15c. each from the Superintendent of Documents, Washington.

Hollow Chisel Mortising Machine

A hollow chisel mortising machine, which may be quickly converted into a plain vertical boring machine by removing the chisel holder, has been put on the market by the Gallmeyer & Livingston Co., Grand Rapids, Mich. Standard equipment is a $\frac{1}{2}$ -hp. ball bearing repulsion induction type motor, arranged for connection either to a power line or a lamp socket. Chisels up to $\frac{1}{2}$ in. in diameter are handled, but the machine may be equipped with a 1-hp. motor if greater chisel capacity is desired.

The standard table has an in and out movement of 4 $\frac{1}{4}$ in. Mounted on it is a hardwood top to insure



Portable Hollow Chisel Mortising Machine Handles Chisels Up to $\frac{1}{2}$ -in. It May Be Quickly Converted into a Plain Vertical Boring Machine by Removing the Chisel holder

bits against damage. A compound table can be furnished as an extra when desired.

Vertical travel of the motor head of 3 $\frac{3}{4}$ in. is provided by means of a foot treadle, with a flexible tension spring providing a return movement. The machine is portable, having a truck type base, but lag screw holes permit fixing in a permanent position when desired.

Productivity of Iron and Steel Labor Shows Gain as Earnings Increase

Output Per Man-Hour for August 2 Per Cent Above Previous Month; Employment in Metal-Working Plants Falls Off

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

THE average earnings of labor in manufacturing industries increased in August, while the cost of living remained practically unchanged. Therefore, the purchasing power of labor probably regained what it lost in July. At least the decline in trend of the preceding two months was checked.

As one looks back over the graph showing the course of labor earnings and living costs for nearly five years, it is seen labor's average per capita earnings have been fairly stable since the spring of 1923. The decline in the middle of 1924 was brief and with that exception it is fair to say that earnings have held close to the high point.

Meanwhile the cost of living has slowly climbed to a point higher than at any time since February, 1921. Thus, "real" wages have gradually been trending down, although the ratio of earnings to living costs is still high as compared with 1921 and 1922.

Compared with 1921, the earnings of labor in the iron and steel industry have continued to be relatively higher than the average for all industries, and they increased more sharply in August, than did the earnings of labor in general.

Full-Time Operations Increase

EMPLOYMENT in manufacturing industry as a whole increased 0.8 per cent in August, which is a little more than usual for the season. It may, therefore, be said that the trend of employment is upward.

In the iron and steel industry, however, there was little change in the number employed, whereas there is usually a gain of nearly 1 per cent in August. In short, activity in the industry measured by the employment index might be said to have indicated a slight setback, were it not for the fact that those laborers who were employed worked longer hours. Compared with last year, moreover, employment in the industry shows a gain of 12 per cent.

The outstanding feature of employment in the iron and steel industry was an increase in the percentage of full-time operation. In August this percentage was 92, compared with 87 in July and 77 a year ago. The percentage of full-time operation in the iron and steel

industry, which has been much below the general average for all industry, is now nearer to that average than at any time since March, 1924.

Productivity of Labor Gains

PRODUCTION of iron and steel per man per hour showed a small but decided gain in August. The output per man employed is estimated to have increased 8 per cent, but this was partly due to an increase in time worked, and, therefore, on a man-hour basis the gain was only a little over 2 per cent. Production per man-hour was better than a year ago, though not up to the levels reached last winter.

As the output per man-hour increased, while prices of iron and steel averaged higher and wages were practically unchanged, the value of iron and steel produced in comparison with payrolls was also larger. Estimated at current prices the output of pig iron in August was 8 per cent greater in value than in July and reached the highest point since May. This represents the first upward movement since March.

As payrolls increased only 5½ per cent, it follows that the ratio of the value of iron and steel produced to total payrolls in the industry must have gained appreciably. This ratio is a valuable index of the trend of earnings in the industry and it may be concluded that that trend is now upward. There is every indication that earnings in the industry will be somewhat greater for the year 1925 than for 1924.

Machine Tool Employment Less

JUDGED by labor indexes the machine tool industry is fairly active and it is believed that the outlook is moderately good. The upward trend of pig iron prices is usually a favorable indication. The general trend toward the adoption of labor saving devices is bound to help the machine tool industry.

The current demand for machine tools, however, is easily supplied with operations far below capacity. The Bureau of Labor Statistics reports that in August only 23 per cent of machine tool establishments were working at full capacity and that average operations amounted to only 66 per cent of capacity.

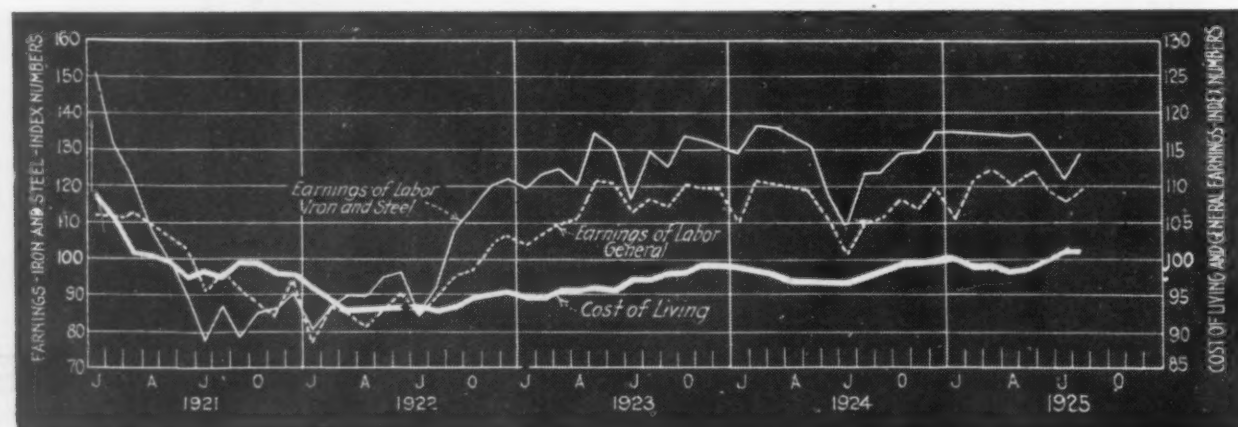


Fig. 1—Earnings of Iron and Steel Mill Labor Have Increased More Than Earnings of General Industrial Labor; Consequently "Real" Wages Are Higher

In This Issue

Production of steel per man-hour gained 2 per cent in August.—And at same time prices advanced while wages held firm.—Page 968.

September daily pig iron output gains 4.2 per cent over August.—Increase of 3632 tons; 8 more furnaces in blast; 200 now active.—Page 982.

Composite price of finished steel shows surprising stability when compared with fluctuations in scrap and pig iron composites.—Indicating that material price changes are not readily reflected in finished steel.—Page 962.

Last few years have proved that steel mill can get along without contracts.—Repetition of old-time buying movement not likely to come soon.—Page 972.

"We are justified in entertaining hopes that further improvement will be seen."—Says E. F. DuBrul before machine tool convention.—Page 957.

Concrete aisles in foundry permit bringing flasks, patterns and cores to molder by tractor.—Instead of using transfer car and crane, thus saving time and preventing stoppage of crane operations.—Page 948.

Alloy steel risers painted in colors to keep them separate from other castings in reclaiming.—Value considerably higher than on carbon steel risers and gates.—Page 950.

Five mile high line between ore mines and mills saves 5 miles carrying at Alabama plant.—Even more saved by elimination of heavy grades.—Page 952.

August exports of iron and steel gained 36 per cent over July.—Machinery exports also increase 20 per cent for highest mark in four years. Machinery imports lowest of year.—Page 1005.

Dangerous practice of permitting molders to cut into ladle stream with hand ladles prevented.—By having safety inspector stand close to spout during cast: foreman can be assigned to this task.—Page 1008.

Program for training salesmen recommended by National Machine Tool Builders' Association.—50 points to check up on salesmen.—Page 959.

Boom and slump in business worst blight on our economic system.—Hoover says study of statistics will create greater business stability.—Page 960.

Does the work of the Bureau of Foreign and Domestic Commerce really have a money value?—Julius Klein says 173 firms got \$72,000,000 worth of business through its aid.—Page 960.

Heat-treatment of rails at Pennsylvania Railroad shops gives encouraging results.—Further research likely to develop improvement in material.—Page 974.

Claims steel companies should maintain system of inspection to stop seamy stock (for automotive usage) at the mill.—And that while improvements have been made in the cleanliness of steel, the average quality is not yet satisfactory to the automotive metallurgist.—Page 975.

Recommends that steel castings for cut gears be purchased on the basis of chemical analysis.—And that only two types of analysis be used: for case hardened gears and for both untreated gears and those which are to be hardened and tempered.—Page 976.

The critical temperature of gray cast iron and of semi-steel can be calculated approximately from the chemical analysis.—And heat treatment based on the critical point can greatly improve quality.—Page 978.

In melting scrap iron in electrical furnace it is found best to charge heaviest pieces first.—Gives best electrical contact and easiest to maintain heat.—Page 979.

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Basic Principles of Plant Design

Expansion of productive facilities and reduction of routine costs are dual aims of every foundryman. Their accomplishment without interrupting the day-to-day output constitutes a remarkable achievement. The description in this issue of the way in which the Bucyrus Co. doubled the capacity of its steel foundry is therefore of unusual interest. Especially gratifying to THE IRON AGE is the detail with which the various steps in this transformation are presented. The "before and after" diagrams illustrate not only the successive steps taken at South Milwaukee, but also a number of fundamental principles which may be of direct help to other foundries with similar problems.

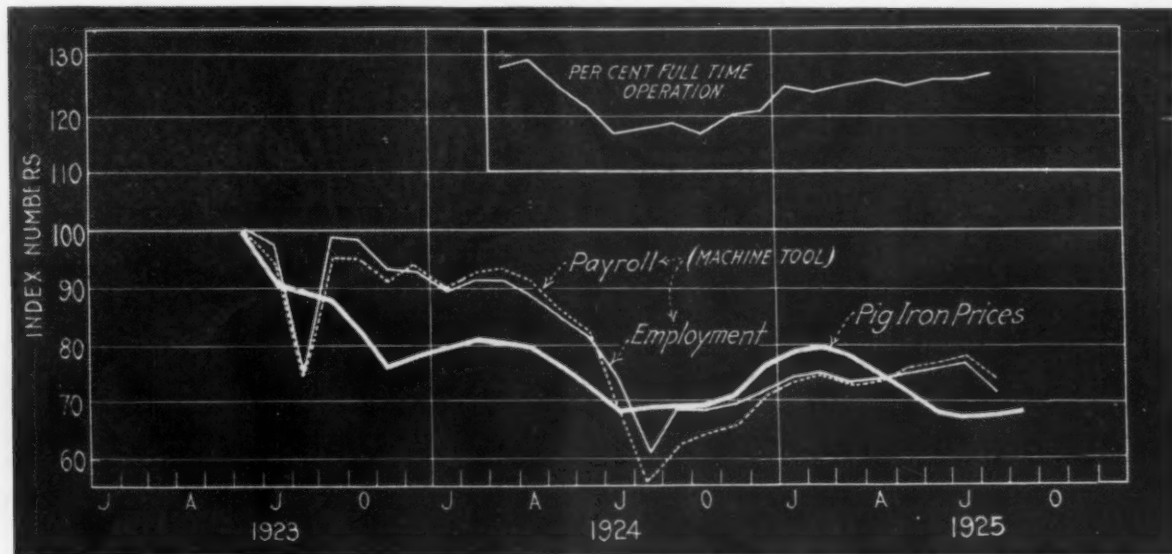


Fig. 2—Employment in Machine Tool Shops Turned Downward in August but With the Fall Demand for Equipment, Both Payrolls and Number Employed Are Expected to Show an Increase

As usual in August, there was a decrease in employment and payrolls in the machine tool industry, but it was not so great as that which occurred in 1923 or 1924. Payrolls averaged 88 per cent of the 1923 average, compared with 65.4 per cent in August last year, which is a gain of nearly 35 per cent. The level of payrolls is relatively higher than in the case of employment, due to the fact that those laborers who are employed are to a larger extent working on full-time schedules.

Foundry Employment Apt to Increase

IN the foundry and machine shop branch of the iron and steel industry, there was a small average de-

crease in employment and payrolls in August. The decrease, however, was relatively smaller than in machine tool plants, while the August increase in the average percentage of full-time operation was larger.

Only 67 per cent of the foundry and machine shop concerns were on a full-time basis, and the average percentage of capacity operated was 78.

The graph (Fig. 3) shows that employment and payrolls in the foundry and machine shop industry present an almost perfect picture of the business cycle which reached a low point in the middle of last year. Our forecast of moderate improvement in industry during the balance of 1925 should, therefore, apply to this branch of industry.

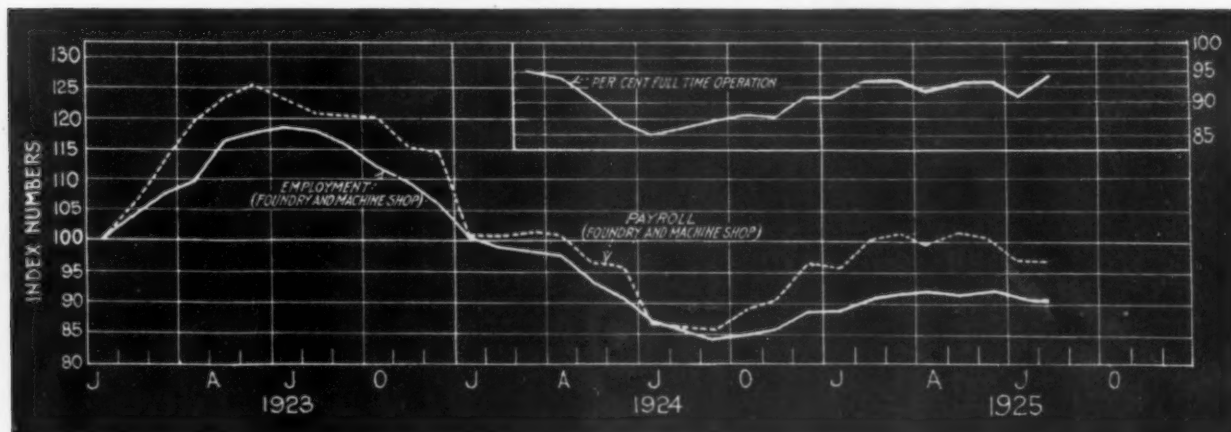


Fig. 3—Note That the Volume of Employment in Foundries and Machine Shops Is Well Above the Level of Employment at This Time a Year Ago

The Iron Age, October 8, 1925

Lake Iron Ore Shipments in September

Iron ore shipments from the Lake Superior region in September were larger than those in September, 1924, by 19.30 per cent. This year there were 7,354,873 gross tons which compares with 6,164,931 tons in September, 1924, an increase of 1,189,942 tons. The ton-nages by ports with the season's shipments and a comparison with 1924, are given as follows:

	September, 1925	September, 1924	To Oct. 1, 1925	To Oct. 1, 1924
Escanaba	765,334	730,230	4,174,068	3,070,343
Marquette	514,189	384,452	2,546,433	1,842,453
Ashland	929,011	627,046	5,282,958	3,931,866
Superior	2,006,177	1,661,675	11,698,993	11,241,040
Duluth	2,320,742	2,084,616	14,294,847	10,891,165
Two Harbors	819,420	676,912	4,814,727	3,985,005
Total	7,354,873	6,164,931	42,812,026	34,961,892
Increase	1,189,942		7,850,154	

The increase in season shipments to Oct. 1, 1925,

has been 7,850,154 tons or 22.45 per cent over last year. This year Great Northern's proportion of the total season shipments was 24.94 per cent compared with 29.45 per cent to Oct. 1, 1924. Duluth's proportion was larger this year, or 33.39 per cent against 31.15 per cent.

To Dismantle Blast Furnace

The Reliance Coke & Furnace Co., Pittsburgh, will dismantle its Ella furnace at West Middlesex, Pa. Passing of this furnace means the passing of potential capacity of 80,000 tons of pig iron annually, but such an output was purely potential as the furnace was of the old hand-filled type and costs were so high that it could be operated profitably only when pig iron was bringing \$30 a ton or more. It was built in 1882 and was remodeled in 1909. It was operated for a brief period in 1923, but since has been idle.

ESTABLISHED 1856

THE IRON AGE

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The Change in Steel Buying

MUCH has been said in market comment of the "hand-to-mouth" buying prevailing in the steel trade. Everyone recognizes that in the past this expression has been used as representing an unsatisfactory state of business. Yet the condition prevailing now is of a high state of activity, alike in production of steel and in its consumption. If not unprecedented, the situation is distinctly novel. It is seen in other lines of trade, and the question of its permanency is widely discussed.

There have been many times in the steel trade when buyers were purchasing only against their immediate or current requirements, but those were generally periods when the requirements were light. Now the requirements are decidedly heavy.

It is nothing new to say that there are changed conditions in the steel industry, and in the steel market in particular; but the difference between present times and pre-war times may easily be underestimated.

It is helpful to recall that recurrently before the war it was suggested that the steel trade ought to reform its practice and make contracts binding. The great bulk of the business was done by contracts. There were great "buying movements," mills selling quarter by quarter farther and farther ahead until things turned the other way. Operations depended on specifications against these contracts. The existence of contracts greatly helped the mills in sustaining prices, as to cut prices meant to undermine the contracts, the flow of specifications dwindling or stopping entirely.

On the other hand, a period of heavy consumption would find the mills making deliveries on old contracts at prices far below what steel seemed really to be worth at the time. The agitation was chiefly along the line that buyers should be made to take out contract material at contract prices. The natural rejoinder was that if this could be effected the buyers would not do so much contracting. That did not appeal to the sellers, the feeling being that a mill could not get along unless it had contracts.

It turns out that a mill can get along. The thing is being done, not with a dull state of trade but

with a very active state of trade. Interesting proof that there is not merely a new order of things as to what is being done, but a new mental attitude as well is the repeated statement of sellers of steel that they do not want contracts. They know that at the prices at which finished steel has been selling in the past 18 months their profits have been unsatisfactory, and they have seen no point in giving a customer protection against a possible price advance, especially in the light of familiar history—the buyer seeking and expecting a readjustment in case of a decline. On the other hand, at no time since the rather hectic movement of the early months of 1923 has the buyer had reason to resort to "forward" buying to make sure of getting a full supply of steel as he needed it. Seeing a steel-making capacity more than equal to the demands upon it, he has argued that price maintenance would be the full net result of any effort sellers might make to secure an advance.

It would be rash to predict that the steel trade will not see again an old-time buying movement, with advancing prices and delivery periods lengthening to three, four and six months. It is entirely probable that the day will come when, after a period of little or no new building of steel works (like that which followed the panic of 1893), existing plant will not be equal to the demand upon it, and buyers will put prices up on themselves in competing for the available steel. But leaving out the extraordinary—like the combination of coal and railroad strikes in 1922—a repetition of the old-time upswings is not likely to come soon. Meanwhile there is no denying that the steel industry needs—greatly needs—one unmistakably good year.

TRANSMISSION of mails by air is effected in less than one-half the time required by train. This means that air mail letters dispatched from New York about 9 p. m. are delivered at their address in Chicago by first carrier delivery on the morning following, or if forwarded from Chicago by train to other points, will move by the first morning train instead of by a late evening train. The delivery of such letters in postal territory

served from Chicago will thus be expedited by at least twelve hours. The air mail service has passed the trial stage and is fast coming to be accepted as a new and permanent business facility.

A Fruitful Journey to Washington

IN going to Washington for its semi-annual meeting the National Machine Tool Builders' Association set an example which many business associations, particularly those interested in export trade, might follow with profit. Not only did the machine tool builders see the inside workings of the Bureau of Foreign and Domestic Commerce and learn more of its many activities in behalf of American business, but they had also an afternoon for getting first-hand knowledge of the wide range of work carried on at the Bureau of Standards. To such a visit the illustrated articles on the bureau's metal research, in *THE IRON AGE* of Aug. 20 and Aug. 27, were an excellent introduction.

Two of the convention sessions were held in the new three-million-dollar home of the Chamber of Commerce of the United States and thus many members of the chamber in the machine tool industry came to a new appreciation of this monumental structure as the headquarters of American business organizations.

At the building of the Bureau of Foreign and Domestic Commerce the machine tool men heard much of the intricacies of foreign trade. Various specialists told of the ways in which the bureau functions, dealing with such subjects as trade information, or commercial intelligence, as it is called in the bureau; foreign laws pertaining to imports; the patent and trademark situation in foreign countries; tariff matters, and the like. Secretary Hoover added much to the interest of the session by his earnest stressing of the Government's interest in furthering American business. As he aptly put it, "the Government is back of business and what is necessary is for business to get back of the Government" to insure the maximum of results from the efforts of the Department of Commerce.

The Anthracite Restrictive Law

IT is not surprising that the Pennsylvania law restricting work in the anthracite mines to certificated miners has come up in the strike discussions. The certification is practically in the hands of the union, which finds this a highly effective method of excluding competition. It has repeatedly been urged that this law should be repealed.

When hearing such recommendations, the labor leaders rise instantly and inquire whether the lives of miners engaged in a hazardous occupation should be further endangered by the introduction of inexperienced men. The public, uninformed and unthinking, promptly answers, No. Of course, this is all fol-de-rol.

There are plenty of bituminous coal miners available, plenty who would like regular employment, and they are not inexperienced. They are just as well able to work in the anthracite mines as are the men who are now on strike. Coal mining is

not an occupation requiring any great skill; and it is the engineers and bosses who guard against danger. If the men obey the rules the hazard that they incur is not exceptional.

The fact is that neither in coal mining nor in metal mining have the miners' unions ever been willing to back any movement toward sound legislation promoting safety in mining. Such legislation would comprise adequate mine inspection and punishment of either operator or miner for dangerous derelictions. It has been the last idea that the unions have been unable to swallow. They are complacent in respect to the punishment of operators, but not of any of their own men, seeing that it might imply loss of job as the least of penalties.

Politicians sometimes have to steer difficult courses; but their problems would appear to be simple in comparison with that of the president of the United Mine Workers, which comprises one division of 150,000 men who can work and will not, and another division of 200,000 men who want work and can not get it. Theoretically the idle bituminous miners ought to press to the anthracite mines, breaking down the restrictive certification law, but they do not. It is the acme of class consciousness when one union man starves rather than enter into competition with another union man, no matter how extortionate the latter may be. The labor leaders who have developed such a feeling have gone far toward creating an *imperium in imperio*.

Angles in the Trade Situation

CURRENT comment on the business situation shows many points of agreement, but there are divergences that deserve more study than has been given to them. On the one hand, all the volume statistics show great activity, while on the other hand labor employment is by no means full, and many business concerns, both in merchandising and in manufacturing, are complaining of their meager profits. Again, while wage rates are high, there is a large volume of merchandise credit—installment credit—with not a little complaint, in some sections at least, that payments are not being made as expected.

The volume statistics are all favorable, in freight ton-mileage, freight car loadings, steel production and consumption, letting of building contracts, etc., and this activity ought to betoken a corresponding degree of prosperity and progress.

The divergence between the physical activity, as shown by quantitative statistics, and the amount of labor employment can be attributed in large degree to the increased efficiency developed in the past three or four years, since men got out of their systems the spirit of 1920. A given volume of trade can be maintained with less effort than formerly, and other things being equal, we ought to be correspondingly better off. Otherwise the old idea would be correct, that breaking windows is good because it makes business for the glaziers.

It would be very difficult to construct any argument that there is unsoundness in the situation on account of the general level of prices. Pre-war times are now more than eleven years out of date, and the fact that prices are 50 to 60 per cent higher

than in the particular year 1913 is of no practical significance. What is significant is that general price fluctuations in more than three years past have been slight compared with those during the war and through the 1921 slump, and have been much less than those we had before the war, which did us no particular harm. If prices stood in any great need of liquidation, they would have been in process of shaking out in the past three years. If they were supported by speculative or other artificial influences in the past three years, there would have been periods of sharp fluctuations. No conceivable artificial influence could have kept them so steady.

In some quarters it is charged that there is unsoundness in the situation due to too much speculation, or investment, in shares; but it has been pointed out that the smoothness with which industry has been conducted has removed the necessity of carrying large stocks of commodities, and thus capital has been released. If the capital exists it is not harmful that there should be investment. Then as to installment buying, its mere growth is not in itself proof of unsoundness. Credit systems and credit information may have been so improved as to make the granting of a large volume of credit safer now than was the granting of a much smaller volume fifteen years ago. The possibilities of excess in incurring such indebtedness are recognized and the way they are being emphasized should tend to reduce the danger. It is plain that the vast bulk of the country's business is conservatively carried on and experience supports the view that such industrial and building activity as we are having represents real prosperity and well being.

Heat-Treated Steel Rails

NEW evidence is at hand that the question of heat treating steel rails is not dead. Trials of 100 and 125-lb. rails heat-treated at the Altoona shops of the Pennsylvania Railroad and at two or three rail mills have been made in the tracks of that system with encouraging results. The resistance to abrasion from wheels is gaged by from 12 to 64 per cent less wear, and thus far only one broken rail is reported. This is the testimony of the engineer of standards of the Pennsylvania Railroad in a report to the International Railway Congress recently held at London.

Railroad experts are evidently convinced that something besides the design of the rail must be studied. Large increases in weight have resulted in longer life and fewer failures. The opinion prevails, however, that the type of failures is such that an improvement in quality is necessary. The London report has it that "we are on the eve of another period of research, this time into the material of construction which goes to make up the rail." This can hardly be accomplished by the use of alloy steel rails except after heat treatment. Here the cost is against them. In the case of the carbon rail, the Sandberg process represents a step in advance, but this is only partial heat treatment. Further research may uncover a method of greatly improving the present rail, the good results noted above

furnishing a new incentive after a long period of comparative inaction.

New Railroad Records

TAKING volume of freight and railroad earnings as the measure, 1925 may already be set down as a year of good times. There seems to be little doubt that a new record for freight moved will be established this year, and the roads have handled this unusual volume of business with a dispatch that is in pleasing contrast with other days when Government management resulted in tie-ups, embargoes and a near approach to traffic chaos.

August figures for Class 1 roads indicate that this year may also see the largest operating income in history. The August net is estimated at \$110,000,000—15 per cent more than for the same month a year ago. July of this year was 33 per cent greater than the same month in 1924. Probably a continuation of such gains is not to be expected in view of the anthracite strike, the smaller wheat yield and reduced estimates of the cotton crop. But if the average gain over 1924 for the last four months of this year is but 7 per cent, the total net operating income for the current year would run above \$1,100,000,000—about 11 per cent, or \$113,000,000, higher than for the preceding twelvemonth.

This would give a 5.38 per cent return on the estimated rate-making valuation, according to the *Wall Street Journal*. When it is remembered that in 1921 the rate was 3.33 per cent, in 1922 4.14 per cent and last year but 5 per cent, the significance of this year's results can be appreciated. The roads are handling an enormous amount of freight, handling it with less delay than ever before and making more money at it than at any time in the last five years. For car and locomotive works and the manufacturers of railroad supplies this should mean a scale of activity well beyond anything that 1925 thus far has developed.

CORRESPONDENCE

Exports in Machine Tools

To the Editor: I have read Mr. Rastall's interesting and encouraging article in your Sept. 17 issue under the heading "Export Outlook in Machine Tools."

I think this article merits an editorial footnote interpreting the curve of machine tool exports from the United States. The 1924 export figure as shown is close to the 1913 figure, but no mention is made of the fact that machine tool prices now are at least double what they were in 1913. No mention is made of the volume of rebuilt and second-hand machinery which is exported today, whereas in 1913 the dealers in such equipment did not have their agents in the leading markets as they have today.

GEORGE R. WOODS,
R. S. Stokvis & Sons, Inc.

New York, Sept. 30.

Finished steel shipments of the Trumbull Steel Co., Warren, Ohio, in September reached 18,500 tons, an annual rate of 460,000 tons. Indications are that October shipments will exceed this figure. The operating situation of the Trumbull company is regarded with increasing favor by stockholders.

Steel Discussed by Gear Makers

Improvements Needed in Material for Automotive Use—Steel Casting and Other Standard Practices Recommended—Technical Committees Active

WITH the acceptance of a recommended practice for steel castings for gears, an address on improvements needed in automotive steels and another on the Rockwell dilation method for the heat treatment of steel, metallurgical matters took a prominent place in the program of the meeting of the American Gear Manufacturers Association, held at West Baden Springs Hotel, West Baden, Ind., Oct. 1, 2 and 3.

President E. J. Frost, president of the Frost Gear & Forge Co., Jackson, Mich., presided at the meeting. Recommended practices proposed by the tooth form and inspection committees were also accepted and definite progress was reported by the other technical standardization committees of the association. Between committee reports addresses were made on a variety of subjects of interest to gear manufacturers, one of the addresses commanding attention being that of W. G. Hildorf, consulting metallurgist, Reo Motor Car Co., Detroit, who spoke on "Improvements Needed in Automotive Steel."

The main problem, at least for the present, said Mr. Hildorf, is one of obtaining greater uniformity from heat to heat, rather than attempting to produce new steels. It should be possible, he said, to obtain heat after heat of the same steel which could be forged, treated and machined alike. It should also be possible to use a standard heat treatment and obtain hardness and physical properties within the limits allowable for that particular steel. Mr. Hildorf's criticisms were offered in a constructive spirit and were intended, he said, only to elicit cooperation and help from the steel industry. In summarizing the position of the steel companies, it was recognized that the steel maker has his troubles, cognizance being given also to the fact that metallurgy is so new that metallurgists do not agree on all specifications.

The subject was developed topically, seams, soft and spongy centers, dirty steel, normal and abnormal steel, fracture testing of steel and grain size, being among the items discussed. The talk was illustrated by means of numerous lantern slides. In summarizing, Mr. Hildorf said:

The steel companies should maintain such a system of inspection that seamy stock which

would cause the customer trouble would be stopped at the mill.

It should be possible to obtain a more uniformly dense structure, that is, freedom from soft and spongy centers.

Improvements have been made in the cleanliness of steel, yet the average quality is not satisfactory to the automotive metallurgist.

Regardless of whether it is possible or not by the use of salt baths to harden abnormal steels, the fact remains that "abnormal steel is more prone to give soft spots than normal steel." Therefore it is hoped that the steel companies will find it possible to so improve their practice that abnormal steels can be eliminated.

Fracture testing opens up a wonderful field for the improvement of automotive steels.

Grain size varies enormously from heat to heat. It is hoped that considerable work will be done along this line, because fine grained normal steels seem to be much better than coarse grained steels.

Among those entering the discussion were E. P. Spaulding, Halcomb Steel Co., Syracuse, and N. L. Deubl, United Alloy Steel Corporation, Canton, Ohio. It is planned to publish Mr. Hildorf's address in an early issue of THE IRON AGE.

Dilation Method for the Heat Treatment of Steel

The Rockwell dilatometer for determining the correct hardening temperatures of steel by indicating and recording volumetric changes in steel subjected to heat was described in an address on "The Rockwell Dilation Method for the Heat Treatment of Steel" by Stanley P. Rockwell, president of the Stanley P. Rockwell Co., Hartford. Interesting curves and charts indicating the contraction and expansion of the steel as it passes through the various temperature ranges were shown by lantern slides. A brief description of the Rockwell dilatometer was given in THE IRON AGE of Sept. 17, page 751.

Associations Standardization Work Going Forward

THE recognized leadership of the association in the establishment of standards pertaining directly to the gear industry was stressed by President Frost in his address opening the meeting, it being pointed out at the same time that there is much yet to be done. "At best," he said, "standardization work is slow, because many minds must meet and agree. When you consider that we labor, not by and for ourselves, but in conjunction with other engineering bodies with the expectation that what we do will not only become our standards or United States' standards, but will be, if possible, of world wide acceptance, our labors and the apparent slowness with which we move, find justification."

An evening was devoted to a technical standards' session under the direction of B. F. Waterman, engineer, Brown & Sharpe Mfg. Co., Providence, second vice-president of the association and chairman of its general standardization committee. At this session, which was similar to those held at previous meetings, the several sub-committees met to formulate plans for intensive work to be undertaken before the tenth an-

nual meeting, which is to be held in Detroit during May, 1926.

The progress of the research into the effect of speed and load on gear teeth being conducted at the Massachusetts Institute of Technology, Cambridge, Mass., was reported on by E. W. Miller, chief engineer Fellows Gear Shaper Co., Springfield, Vt., and A.G.M.A. representative of the A.S.M.E. research committee on gears. Attention has been given to the perfection of mechanical details of the machine developed by Dr. Wilfred Lewis for the test. The machine was said to have proved responsive to the problems presented for solution, but a number of minor improvements are now being made, the character of the research requiring utmost care in checking each detail of construction.

Standard Practice for Gear Castings

The recommended practice for steel castings for gears was presented by Chester B. Hamilton, Jr., Hamilton Gear & Machine Co., Toronto, Canada, chairman of the metallurgical committee. It is recommended

that steel castings for cut gears be purchased on the basis of chemical analysis, that only two types of analysis be used, one for case hardened gears and the other for both untreated gears and those which are to be hardened and tempered. The items covered in the report include process of manufacture; discard; heat treatment; chemical composition; ladle analysis; check analysis; finish; marking; inspection; rejection and reheating. It is planned to publish this recommended practice in a forthcoming issue of THE IRON AGE.

Proposed Basic Rack Accepted

The basic rack for the $14\frac{1}{2}$ deg. modified involute system, brought up by the tooth form committee at the ninth annual meeting of the association, held in Pittsburgh, May 6 to 9, was adopted as recommended practice. The mathematical definition of this basic rack was illustrated in THE IRON AGE of May 14, page 1439. The report was presented by H. J. Eberhardt, Newark Gear Cutting Machine Co., Newark, N. J., chairman.

This committee has been asked to investigate European railroad gearing practice, especially proportions of long and short addendum gears, with a view to standardizing American practice. Data are being collected by the committee on the subject of ease-off, or modification of the theoretical tooth curve to accommodate various ratios under conditions of housing and tooth deflection. The committee has been requested to find a hob contour that will satisfactorily hob gears to run with gears cut with both disk and Fellows type cutters.

Working on Horsepower Formula for Non-Metallic Gears

Commendable work has been done by the non-metallic gearing committee under the chairmanship of F. G. Sorenson, Cincinnati Gear Co., Cincinnati. The committee submitted a horsepower formula for non-metallic spur gears composed of phenolic materials or rawhide, together with its derivation. An objection raised to the formula was that it differed from the standard formula in being based on the diametral instead of the circular pitch, which was considered undesirable, although it gives correct results. Another objection to the report was the adoption of the velocity factor commonly used in connection with cast iron gears, it being explained that these non-metallic materials have less strength than cast iron under static load and greater strength at high speed. It was suggested that information be collected on the variation of the permissible stress with speed for the different non-metallic materials.

The report of the nomenclature committee which is headed by E. W. Miller, Fellows Gear Shaper Co., Springfield, Vt., was read by D. I. Hamilton, advertising manager of the same company. This committee

has perhaps the hardest task of any, and its work is regarded as of fundamental importance. A list of names of 87 elements has been compiled and symbols assigned to those of the elements which have dimensional value. Rules laid down permit of anyone making symbols for those not listed.

The spur gear committee which is headed by J. D. Williamson, research engineer, Fellows Gear Shaper Co., also reported progress. At the next meeting this committee plans to present specifications covering limit diameters of holes. Information will be asked for as to whether the membership prefers specified dimensions with plus tolerances only, minus tolerances only, or both plus and minus tolerances.

Recommended Practice for Inspection of Gear Cutters

The proposed recommended practice for the inspection of gear cutters (disk) offered by the inspection committee, of which F. G. Eppley, superintendent of the Albaugh-Dover Mfg. Co., Chicago, is chairman was accepted with corrections. The items covered are hardness; bore; wobble; concentricity and radial sharpening; form central; tooth form thickness; tooth form by lantern method and tooth form by gage method. An adjustable template for use with the latter method is illustrated.

The worm gear committee, headed by J. C. O'Brien, secretary Pittsburgh Gear & Machine Co., Pittsburgh, has before it an elaborate program and has done a great deal of intensive work. A formula for the horsepower capacity of worm gears has been worked out. This formula involves an "experience" constant and the committee expects to determine the value of this constant by obtaining from members complete data on worm gear installations, both successful and unsuccessful. It is expected that a number of different constants for different operating conditions will be obtained.

A. F. Cooke, vice-president and manager of the Fawcus Machine Co., Pittsburgh, in reporting for the herringbone gear committee, said that work is being done on a horsepower chart and a new formula giving substantially the same result as the present one will be presented at the next meeting, the advantage of the new formula being that it is theoretically correct.

A list of names for parts of automobile transmissions was submitted by the transmission committee, A. E. Grater, Muncie Products Co., Muncie, Ind., presenting it. The same committee submitted a print of the S.A.E. standard for flywheel and clutch housings, which has been adopted by several manufacturers.

A study of lubrication, noise and tooth form of gear drives of electric railway, mill and mine locomotives is being made by the committee on gears and pinions for electric railway, mill and mine use, of which W. H. Phillips, manager of engineering and works of the R. D. Nuttall Co., Pittsburgh, is chairman.

Addresses on Commercial and Technical Phases of Gear Industry

IN addition to technical and commercial standardization, cooperation with the government and with private business was touched on in the opening address of President Frost. The services of the association in matters of material and design have been tendered to government officials to the end that when drawings on which quotations are wanted are received, the articles can be made on standard equipment, with a tool set-up of normal cost and with limits obtainable. A case during the war was cited in which drawings were submitted involving bevel gears where no great refinement was needed, but the angular dimensions were 300 times finer than could at that time be set on a Gleason generator. Millions of dollars, it was said, are squandered annually on manufacturing commodities to drawings that could be greatly improved as to materials of construction or as to design. The association

should, it was thought, take the lead in remedying this uneconomic condition.

Machine Hour Rate in Shop Overhead

The machine hour rate as the proper basis for prorating shop overhead when machines varying widely in cost are used was advocated by E. A. Kebler, president Fawcus Machine Co., in a paper on the "Machine Hour Rate—the Ideal Foundation for Gear Estimates and Costs."

A machine hour rate, it was pointed out, is the relative cost of operating on production work, a bench hand, erector, fitter or a machine, this rating being used only to prorate the indirect manufacturing expense. Direct labor and direct material is, of course, charged to the jobs. Administrative and selling expense is usually prorated by productive hours.

The chief advantage of the machine hour rate was urged as making each machine carry a burden proportionate to its cost of operation. In the case of a company having seven rates, a machine with rate No. 6 would carry six times more of the actual shop overhead than a machine with the No. 1 rate. These rates are fixed by a survey of the plant and by comparing the cost of operating each machine. These costs may be obtained, for instance, by apportioning depreciation on buildings and equipment, insurance, rent, light and heat, taxes, etc., over the floor space occupied by each machine and its operator; power apportioned by horse power; and adding for each machine its depreciation and cost of tools used on same.

The machine hour rate plan was said to be particularly advantageous in that very expensive machines carry their true shop burden instead of the same as that of a fitter or a small drill press. In general it was said that the machine hour rate is the safe and scientific method of distribution, and gives more knowledge of the expense element in cost than any other method. The value of this method in preparing estimates for bidding was stressed, and as to quotations, it was said that while there are a number of factors entering into the determination of the proper price to quote, if we have before us, as a basis, an estimate which will closely approximate the cost, if order is secured, there certainly would be fewer ridiculous bids.

Many other associations, it was pointed out, are reaping the greatest benefit through uniform cost methods, which have largely reduced cut-throat competition and unnecessary losses. Some of the advantages obtained by uniform cost accounting, as listed by the Chamber of Commerce of the United States, were included in Mr. Kebler's paper.

Measuring Gear Teeth

Difficulties encountered in inspecting some of the dimensions of gear teeth and means of overcoming those difficulties were outlined in a paper by J. L. Williamson, research engineer, Fellows Gear Shaper Co.

The relations of circular pitch, tooth thickness and space width are so definite that it would seem impossible to find a discrepancy among these measurements. However, said Mr. Williamson, very often they do not agree. A definite trigonometric relation does not exist, and if actual measurements were made no discrepancy should be found. It was pointed out, however, that usually actual measurements are not made, but instead the variation in tooth thickness, space width and circular pitch were checked by taking relative readings.

"We set our fixture for checking the thickness of teeth *near* the pitch line," he said. "Another setting is required for the space width which is also taken at a point *near* the pitch line. Then still another setting is required for a comparison of circular pitches on one side of the teeth and a slight changeover of the machine for checking the other side. These readings are also taken in the *vicinity of the pitch line*." From an illustration of the lines thus measured it was pointed out that effort spent trying to compare these readings would only be wasted, although the values for each dimension taken separately tell much about the physical characteristics of the gear. Some of the factors entering into these measurements were discussed in detail.

The need for highly trained inspectors was emphasized and the qualifications of inspectors outlined. It was said that many arguments could be presented in favor of a well planned system of training for inspectors. "As long as the human element plays such a prominent part," said Mr. Williamson, "we should first raise the standard of our inspectors, if we would raise the standard of our inspection. An inspector must have the confidence and assistance of the management, he said, and direct lines of responsibility should be established and maintained.

Research Into Efficiency and Durability of Spur Gears

Gear research recently undertaken at the University of Illinois, Urbana, the results of which are reported in bulletin No. 149 of the Engineering Experi-

ment Station there, was presented in brief by C. W. Ham, at an evening session. Mr. Ham is associate professor of machine design at the university, and the investigation was made by him and J. W. Huckert, assistant professor of mathematics, University of Louisville. Mr. Ham's address, presented under the title of "Some Recent Developments in Gear Research," was illustrated by lantern slides. The paper includes a brief history of published research work on the efficiency, durability and strength of toothed gearing.

The object of the research was to determine the efficiency and durability of spur gears. The apparatus used consisted chiefly of the gear testing machine designed and built by Dr. Wilfred Lewis, president of the Tabor Mfg. Co., Philadelphia, for the university in 1916. The original intention was to determine the efficiency of spur gears and the breaking strength under varying conditions of load and speed. But because of the growing importance of data on the wear of gear teeth the first tests were confined to the determination of the efficiency and wear of unhardened gears.

The Lewis machine and the method followed in making the tests were outlined and conclusions on both efficiency and durability were summarized. The tests dealt largely with the behavior of gear teeth as regards efficiency and wear, rather than with quantitative determinations of such important factors as critical tooth loads, etc. It should be noted also that the tests involved only one combination of materials. It is believed that these series of tests will serve as a basis for further investigations necessary in order to obtain quantitative experimental data for establishing a reliable formula or formulas, which will correlate the wearing qualities of a tooth to its size, shape and composition under various conditions of load, speed and lubrication. It was stated that the ultimate aim should be, not the determination of the amount of wear in a given time or under given conditions, but the determination of the limiting conditions for the prevention of wear.

Gears Important in Airplane Construction

Commercial aeronautics was stressed as of prime importance by Brig. Gen. J. E. Fechet, chief of Air Service, U. S. Army, in an interesting address following a luncheon meeting. Commercial aeronautics is, he said, fast transportation, leaving the ground for the carrying of heavy material, the speed of which is not of primary importance.

The outstanding need of proper gears in airplanes was emphasized. The maximum propeller efficiency is passed at 1200 r.p.m., while the peak of efficiency of the engine is at 2000 r.p.m. The necessary speed reduction is effected by gears, two types of which have been used, direct drive by herringbone gears and by epicycloidal (planetary) gears. The latter were said to have also been used, and although they have been found to reduce tooth pressures, difficulty has been experienced because of backlash when the throttle is suddenly closed.

We look to engineers and gear men, he said, for a solution of the gear reduction problem. As to lighter than air ships, he believed that they would be used commercially for long distance transportation of freight and passengers. In Europe the growth of commercial aeronautics was said to have been from 750,000 lb. of freight in 1919 to 8,500,000 lb. in 1924. The growth in passenger transportation has been from 3000 to 62,000 in the same period. In air transportation of mail we surpass all other countries. The Government was said to look with favor upon the commercial airplane undertaking of the Ford Motor Co., as it will permit of a genuine tryout of commercial aviation.

Uniform Action Sought in Use of Invoice Forms

Uniform action in the use of invoice forms was urged in the report of the commercial standardization committee, which was presented by its chairman, E. A. Kebler, president Fawcuss Machine Co. The purchasing agents' tentative form of invoice brought to the association's attention some years ago has been revised, the Department of Commerce suggesting

its general adoption. The Ford Motor Co., also asks that its form be generally used. The purchasing agents' association was said to claim that the Ford invoice is primarily for the buyer, while its form also meets with the requirements of the seller. Members were requested to submit their views to the secretary, stating what action, if any, they are taking.

In a plea for cooperation, part of an address recently made by Charles J. Graham, president of the Bolt, Nut and Rivet Manufacturers' Association was given, but modified to cover the gear industry. This section of the report, in part, was as follows:

The gear industry has become specialized so that it cannot be operated as a side line. A large steel works, for instance, installed gear cutters and their records show apparent profits as no overhead is included in cost, but they are evidently operating at a loss as their cutting speed is only one-third of that used by gear manufacturers.

A manufacturer of rolling mill machinery was selling gears under the market, he figuring practically no overhead and but little labor, as his automatic machines were op-

erated by men whose time was charged to other operations in the plant. If we can convince those who are cutting their own gears that it will be to their advantage to let us supply them, and for them to confine their energies to their own products, we can operate our plants on a normal basis.

New Members Elected

The Lewis Foundry & Machine Co., Pittsburgh, with John Lucas as executive representative, was elected to membership in the association, and the application of Alfred Wiseman, Ltd., Birmingham, England, with J. Wilfred Harris, director, as executive representative, was voted on favorably. The Ferguson Gear Co., Gastonia, N. C., with Richard Ferguson, president, as executive representative, and the Timing Gear Corporation, Chicago, represented by R. O. Bauman, are other new members. John Lundberg, Tool Steel Gear & Pinion Co., Cincinnati, was admitted as an associate representative of his company.

The next meeting, the tenth annual, will be held in Detroit in May, 1926, the exact date to be decided later.

Gray Iron Problems at Syracuse

American Foundrymen's Association Discusses Temperature Control, Heat Treatment, Electric Melting and Synthetic Iron

SYRACUSE, N. Y., Oct. 6.—With more than 170 exhibits and an attendance which may make a new record, the American Foundrymen's Association opened its twenty-ninth annual convention and exhibit here Monday morning. Despite the relative inaccessibility of the New York State Fair Grounds, where both the exhibit and the technical sessions are being held, there is a gratifying show of enthusiasm. This went so far, on a cold, raw, Monday afternoon, as to hold some hundreds of men in the two technical sessions in unheated rooms. Overcoat collars turned up and hats on, with hands thrust deep into pockets, the audiences sat through spirited discussions, with surprisingly few withdrawals.

Gray Iron Castings

Four papers made up the program of the session on gray iron problems. These were:

"Effect of Heat Treatment on the Properties and Micro-Structure of Gray Cast Iron and Semi-Steel," by O. W. Potter, University of Minnesota, Minneapolis, presented on behalf of the Twin Cities Foundrymen's Association.

"Electric Melting of Cast Iron," by G. E. Lamb, Lamb Machine Co., Hoquiam, Wash.

"Synthetic Cast Iron and its Possibilities for the Seattle District," by G. S. Schaller, University of Washington, Seattle.

"Continuous Iron Temperature Recording," by H. W. Dietert and W. M. Myler, Jr., United States Radiator Corporation, Detroit.

Gray cast iron has two properties the control of which, Professor Potter says, has always been a big foundry problem. These are the hardness and the dimensional changes under repeated heating and cooling. To produce uniform hardness and to eliminate massive cementite from gray iron is the constant endeavor of every foundryman manufacturing castings which must be machined. Some manufacturers have found that the only way to obtain the ideal condition is to anneal the castings.

Test bars were examined in many ways in the investigation undertaken: chemical, microscopic, hardness, tensile and transverse strength, both crude and again after heat treatment. Ten different heat treatments were employed, involving heating the bars to definite maximum temperatures of 1370 to 1600 deg. Fahr., with supplementary heating to 1670 deg. in two

cases and drawing to 1290 deg. in two others.

When heated above the critical point and cooled rapidly but not quenched there is little change in total carbon, but combined carbon has been greatly reduced. When so heated and cooled slowly in the furnace, total carbon does not change, except for extremely high silicon irons, but combined carbon is completely decomposed. When specimens were quenched from just below the critical point there was a decided tendency to oxidize some of the carbon. When this quenching was in oil, the combined carbon was reduced.

Dimensional Changes

Changes varying from an increase of 4.6 per cent to a decrease of 0.71 per cent in length were observed in different specimens. But the tendencies, studied in connection with silicon and total carbon, were variant. Heated above the critical point, held there 3 hr., cooled slowly 15 min. (to black) and then cooled rapidly in the air, dimensional changes increase with decreased quantities of Si + T.C. When cooling in the furnace slowly, from above the critical point, the growth increases with increase in Si + T.C.

Conclusions reached were as follows:

1.—Proper heat treatment can greatly improve the general properties of gray cast iron and semi-steel. One important result is a uniform hardness and the elimination of massive cementite under annealing.

2.—To heat treat properly, the correct critical temperature must be located and the temperature carried only enough above this to insure all parts being heated above the critical.

3.—The critical temperature of gray cast iron and of semi-steel can be calculated with a fair degree of accuracy from the chemical analysis, according to the following formula:

Critical Temperature = $730 \text{ deg. C.} + (28 \text{ deg.} \times \text{per cent Si}) - (25 \text{ degrees} \times \text{per cent Mn})$.

4.—Carbon is oxidized when subjected to a quench from just below critical temperature.

5.—The best combination of properties was obtained by heating to 870 deg. C., holding for 3 hr., cooling to black in furnace and then air cooling. This, the heat treatment recommended by the Schaap process, produced a uniformly soft product with only a slight reduction in strength.

6.—Holding at high temperature for long periods or cooling very slowly, such temperatures produce extreme softness, but also greatly reduce the strength.

7.—To overcome the difficulty of dimensional changes, gray cast iron may be machined, and then subjected to a quench to produce hard iron not affected by intermittent heating and cooling below the critical.

8.—The properties of both gray cast iron and semi-steel can be varied greatly by heat treatment. The possibilities of improving and controlling these properties offer great prospects of practicability. To do this, additional systematic research is necessary for the coordination of chemical composition, physical properties and correct heat treatment, along with a study of the microstructures. This, along with the use of ferroalloys in cast iron and semi-steel, will help to extend their field of usefulness and prevent somewhat the further encroachment of other metals and alloys.

Discussion

In the discussion it was pointed out that foundrymen try to produce a hard or close grained iron. The machine shop, per contra, wants it annealed, that it may machine easily. The question of time of treatment is important for, the longer the temperature is maintained, the greater the effect on the casting. Castings of unequal sections are subject to considerable distortion on quenching or drawing.

J. E. Fletcher of the British Cast Iron Research Association pointed out the vital connection between silicon and total carbon. The magnitude of the sum of these two metalloids is of great importance.

Electric Melting of Cast Iron

Melting in an electric furnace a charge consisting entirely of scrap iron was discussed by Mr. Lamb. His paper was a record of results in a locality where current is cheap, coal is expensive, new materials are dear and the quality of the product is secondary. As the same furnace was used for steel and the heats frequently alternated, the problem of cleaning the bottom thoroughly after each iron heat was serious. Otherwise it was difficult to avoid high carbon in the steel.

In melting iron scrap it was found essential, for best effect, to charge the heaviest pieces first, thence descending in size until the lightest appear on top. The author likened this structure to that of a macadam road and stated that it gave the best electrical contact and one which was fairly easy to maintain.

Various methods were used to obtain the desired carbon content. The bath was stirred with a green wooden pole; graphite was added, sometimes more than once. Yet rarely could the total carbon be brought above 3.40 per cent. For ease in machining, silicon had to be added, the best combination being 6 per cent of Si + T.C. Loss of silicon was a serious problem in most of the addition methods tried. Silicon carbide gave good carburization but no silicon. High-silicon pig iron shows little loss, but is more expensive than ferrosilicon.

Cost of production thus is high unless high-silicon pig iron or scrap is available. The additional wear on furnace lining, due to interlarding steel heats with iron heats, is negligible, mainly because of the lower temperature at which the iron heat is run. But these iron heats must be kept hot enough to be sure to empty the furnace, else the next steel heat will be spoiled from too much carbon. Pig iron is not necessary, to obtain good iron, provided the charge is brought to the desired analysis with ferroalloys or scrap.

Discussion

Absorption of carbon into the iron increases with higher temperature, it was pointed out. On the other hand, the higher the silicon, the less carbon will be taken up. This difficulty is avoided by adding the silicon later. The efficiency of absorption of carbon was estimated at about 50 per cent, varying with conditions.

Continuous Iron Temperature Recording

To obtain a means of control for cupola use which would provide uniform iron of desired quality was the object sought in the investigations reported by Mr. Dietert and Mr. Myler. The paper traced the successive tests with different types of measuring apparatus and told why each, in turn, was discarded. Finally a thermocouple was adopted, suspended with its tip 2 in.

above a continuously flowing stream of iron from which all slag has been skimmed. Hot gases arising from this iron, together with some radiation, give temperature readings, not in deg. Fahr., but in a measure readily translatable.

Sample charts were shown, to indicate how and along what lines progress had been made in control of the iron and of the entire running of the cupolas. Including the blast, how long the bed was burned, time between blast on and iron running, much information could be gleaned from the autographic chart record. Cold shuts and leaks had been largely avoided through the uniformity of the high-temperature iron obtained under this control method, items of supreme importance in radiator manufacture.

Discussion

Dr. Moldenke raised objection to the consideration of this method of control for general foundry use. He pointed out that it was applied here most successfully to a highly specialized product—castings with extremely thin walls. These require a high temperature and a soft iron. He advocated melting iron as hot as it can be done and then, if the sand or chaplets will not stand such a temperature, let it cool in the ladle until they can take it. One trouble with very hot iron lies in the gates where, unless there are exceptionally good sink heads, flaws will occur. Volume regulation of the blast, said the speaker, is preferable in foundries to the temperature regulation outlined in the paper.

R. F. Harrington, Hunt-Spiller Mfg. Co., Boston, reported a considerable reduction in foundry fuel bills through the steady use of optical pyrometers. These were focused on the metal in the spout and two were kept going all day. A marked reduction in the proportion of defective castings was found to accompany this method of control.

As to temperature, some thin cylinders 40 in. in diameter and 40 in. long required 2600 deg. Fahr. or more when the wall was 1 in. thick only. Otherwise a subskin defect was found, and it was a matter of only 50 deg. between good and poor castings. But with the thickness increased to 1½ in., 2550-deg. iron was amply hot.

British Exchange Paper

Two outstanding features of second day's session were the annual exchange paper of the Institute of British Foundrymen, presented Tuesday morning by J. E. Fletcher of the British Cast Iron Research Association, and a spirited discussion of foundry cost accounting on Tuesday afternoon at which 350 were present and many speakers participated.

Discussing fundamental relationships in cast iron, wrought iron and steel manufacture, Mr. Fletcher touched on influences affecting the chemical and structural form of pig iron, the common base of all iron and steel works and foundry processes, on the effect of repeated remelting on primary or pig iron structure, on functions of working slags on interrelationship of microstructure in cast iron, wrought iron, malleable cast iron and steel, and on the problem produced by the increasing use of scrap in modern iron and steel founding. He stressed the need of generous use of virgin metal to offset deterioration caused by excessive use of reworked scrap. The full discussion of Mr. Fletcher's paper will be published later.

Practical Cost Accounting Discussed

Practical foundry cost accounting was discussed by E. T. Runge, Cleveland, using examples of different methods of figuring costs. Two rational accounting methods in one particular case of high cost work gave about 21 cents per pound whereas the ordinary rule of thumb showed only 6 cents.

W. J. Barrett, Metropolitan Life Insurance Co., gave an illuminating talk on cost accounting and management methods as he had found them in a survey of many foundries big and little all over the country. He made a special plea for study of material handling costs, with particular reference to the labor element.

The registration to 5 p. m. today (Tuesday) was about 2500 with 190 exhibitors occupying 55,000 sq. ft. of space.

Continental Competition Less Keen

Forward Buying More in Evidence in English
Market—Prices Still Soft

(By Cablegram)

LONDON, ENGLAND, Oct. 5.

PIG IRON is rather more active. Home consumers feel that prices are about at bottom and some sales have been made up to the end of the year. Export inquiry is broadening but sales are restricted. Continental competition is less keen. Philadelphia pipe founders have bought 20,000 tons of Welsh pig iron for October, January shipment. Foreign ore is idle, Bilbao Rubio nominally 20s. (\$4.84) c.i.f. Tees.

Finished steel is generally quiet and values show an easy tendency though quotations are unchanged. An improved demand for Continental steel is in evidence. Japan and South America have bought moderately. Home users buying semi-finished sparsely. Sheet bars sold at £4 13½s. (\$22.60) f.o.b. Wire rods are strong at £5 15s. (\$27.88) f.o.b. January shipment earliest. German plate syndicate has reduced basis price 75 pf. to

149¼ m. (1.61c. per lb.) following an 0.5 per cent reduction in sales tax. Rhenish Westphalian merchants have formed their own syndicate. Germany is reported as assisting the proposed new metallurgical establishments in Russia and will form a Russo-German company with capital about 50,000,000 marks.

In Italy the Societa Anonima Terni, Rome, is erecting new sheet mills and installing two Martin furnaces. Tin plate makers here are not yet unanimous on their pooling scheme and negotiations are still proceeding. The market is firm and moderate business is being done at 19½s. (\$4.72) basis, I C, f.o.b.

Well placed mills ask 19¼s. (\$4.78) for January and later delivery. Galvanized sheets are steady with considerable sales being made in small parcels. Japan has bought several lines of thin black sheets for shipment up to the end of the year.

SYNDICATE PRICES LOWER

Steel Reduced 0.5 Per Cent to Correspond with
Lower Sales Tax

BERLIN, GERMANY, Oct. 6.—(By Radiogram).—The market remains quiet but the depression has not further increased. Smelters have big unsalable stocks of pig iron. Increasing French competition is reported in southwest Germany.

The pig iron syndicate has reduced prices from 2 to 5 marks per ton according to grade and location of buyer. Steel syndicate's prices in general are unchanged, but an all around reduction of 0.5 per cent has been made corresponding to new reduction in sales tax.

The steel syndicate has decided to retain throughout October the present limitation of output to 65 per cent of full capacity.

Negotiations for the creation of a Western steel trust are retarded by Krupp's withdrawal, but it appears settled that the remaining six corporations will consolidate. Berlin banks are organizing a big joint credit to facilitate export of machinery to Russia.

Steel Ratio of Seven Rhenish-Westphalian Concerns—Bar and Wire Cable Syndicates

BERLIN, GERMANY, Sept. 20.—The Rhenish-Westphalian combine is to take bigger dimensions and a closer form than was at first reported. A new member is the Thyssen concern, which, with Krupps, Phoenix, Rhenish-Steel, Deutsch-Luxemburg, Gelsenkirchen and Bochum Cast Steel, makes seven members, all powerful in pig iron, steel, rolled goods and coal. It is decided that the combine will take the form of a single corporation, thus differing from the loose working understandings (*Interessenge meinschaften*) which have been the rule of late.

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.84 per £, as follows:

Durham coke, del'd..	£0 19s.	\$4.60
Bilbao Rubio ore†...	1 0½	4.96
Cleveland No. 1 fdy.	3 11	17.18
Cleveland No. 3 fdy.	3 7	16.22
Cleveland No. 4 fdy.	3 6½	16.09
Cleveland No. 4 forge	3 6	15.97
Cleveland basic	3 7½	16.34
East Coast mixed.....	3 14	17.91
East Coast hematite.	4 19	23.96
Ferromanganese	15 10	75.02
*Ferromanganese	15 5	73.81
Rolls, 60 lb. and up..	8 5	to £9 0s. 39.93 to \$43.56
Billets	6 5	to 7 15 30.25 to 37.51
Sheet and tin plate bars, Welsh	6 5	30.25
Tin plates, base box.	0 19¼	to 0 19½ 4.66 to 4.78
		C. per Lb.
Ship plates.....	7 15	to 8 5 1.67 to 1.78
Boiler plates	11 10	to 12 0 2.48 to 2.59
Tees	8 0	to 8 10 1.73 to 1.84
Channels	7 5	to 7 15 1.57 to 1.67
Beams	7 0	to 7 10 1.51 to 1.62
Round bars, ¾ to 3 in.	8 10	to 9 0 1.84 to 1.94
Steel hoops	10 15	and 12 10* 2.32 and 2.70*
Black sheets, 24 gage	11 5	2.43
Black sheets, Japanese specifications	15 5	3.30
Galv. sheets, 24 gage	16 2½	to 16 5 2.91 to 3.51
Cold rolled steel strip, 20 gage	18 0	3.89

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

Foundry pig iron:(a)						
Belgium	£3 2s.	to £3 3s.	\$15.00	to \$15.24		
France	3 2	to 3 3	15.00	to 15.24		
Luxemburg	3 2	to 3 3	15.00	to 15.24		
Basic pig iron:(a)						
Belgium	3 1	to 3 2	14.76	to 15.00		
France	3 1	to 3 2	14.76	to 15.00		
Luxemburg	3 1	to 3 2	14.76	to 15.00		
Billets:						
Belgium	4 10½	to 4 11	21.91	to 22.03		
France	4 10½	to 4 11	21.91	to 22.03		
Merchant bars:						
Belgium	5 6	to 5 7	1.14	to 1.15		
Luxemburg	5 6	to 5 7	1.14	to 1.15		
France	5 6	to 5 7	1.14	to 1.15		
Joists (beams):						
Belgium	5 1½		1.10			
Luxemburg	5 1½		1.10			
France	5 1½		1.10			
Angles:						
Belgium	5 2		1.11			
½-in. plates:						
Belgium	6 12½		1.43			
Germany	6 12½		1.43			
¾-in. ship plates:						
Luxemburg	6 2½	to 6 5	1.32	to 1.36		
Belgium	6 2½	to 6 5	1.32	to 1.36		

(a) Nominal.

[Later cable dispatches state that the Krupp concern has withdrawn from the group, leaving the whole matter "up in the air."]

One reason why such understandings were preferred to formal fusions into single corporations was that a heavy capital tax was imposed in case of fusions. But the Luther Cabinet has materially lowered this tax, and the cost of fusion is thereby much reduced. The new trust will have about a one-third share in the total production of the pig iron syndicate. Its position in the raw steel syndicate, which has, at full capacity, a total output of 14,700,000 metric tons a year, is such as to give it a majority in voting:

Output at Full Capacity, Metric Tons		
	Raw Steel	Coal
Bochum Steel	493,000	2,235,000
Deutsch-Luxemburg	1,056,000	5,874,000
Gelsenkirchen	109,000	12,138,000
Phoenix	1,659,000	8,256,000
Rhenish Steel	987,000	6,640,000
Thyssen	1,580,000	6,593,000
Thyssen works proper...	86,000	.....
Geissweider Ironworks ..	.....	5,225,000
Krupps	1,659,000	.....
Krupps proper .....	.....	.....
Krupp-Westphalian Wire Co.	88,000	.....
Total	7,717,000	46,961,000

STEEL STRIKE CONTINUES

Belgium Hampered by German and French Sales at Lower Prices

ANTWERP, BELGIUM, Sept. 16.—On the whole the market remains weak. Makers are trying to get prices higher. Unfortunately the market tendencies are still undecided and, if some prices have been increased others had to be reduced to meet business. Without doubt we would have seen much higher domestic prices if there were more effective orders and if foreign competition had not become so strong. French, and especially German, exporters no longer compete with us for overseas business, but come and try with low prices to catch business at home. This makes worse the already bad position.

The strike is still going on in the big steel industry of the Charleroi district. Work was resumed Sept. 1 in the engineering and building trades, as well as in the foundries. This caused a certain increase of domestic demand, but not at all on the scale expected. Any small improvement of the market is due only to a better current of export business, notwithstanding the stronger competition from our neighbors.

Finished Steel.—Steel commodities profited first of all from the resuming of work in the building shops. Business is still far from bright, but there is a small improvement. Prices for bars and shapes stabilized, nothing more. The current price for bars for good orders was 107s. 6d. and 108s. f.o.b. Antwerp, basis. Some business seems to have developed with the Atlantic Coast (of the United States) on that basis. Corrugated bars, squares and rounds were weaker. Their basis price ran from 116s. to 118s. f.o.b. Antwerp. Plain bars of structural grade, A. S. T. M. specifications, are quoted, basis, 112s. f.o.b. Antwerp.

Beams are not in demand and prices are weak. They are nominally 104s. but business certainly can be passed through at somewhat less. Prices for wire rods are too high for foreign business, i.e., 115s. to 118s. f.o.b. Antwerp. Hoops on the contrary are firmer and well asked for. Quotations went to 143s. and even 145s. for usual material. Prices are approximately as follows:

	Per Metric Ton	Per Gross Ton	Per Pound
Bars	£5 8s. or	\$26.35 or	1.18c.
Beams	5 4	25.40	1.13
Angles	5 8	26.35	1.18
Channels	5 4	25.40	1.13
Rods	6 0	29.30	1.31
Corrugated bars	5 18	28.80	1.29
Steel hoops	7 5	35.40	1.58
Cold rolled hoops	11 10	56.00	2.50
Wire rods	5 15	28.00	.....

In the coal syndicate the total quotas of all members at full output capacity is 157,300,000 metric tons. The new trust's share is nearly one-third, as shown in the table.

Half a dozen corporations of second rank, which at first remained outside the bar iron syndicate, have now been taken in. Negotiations are under way for formation of a wire cable syndicate. Difficulty has been caused by the fact that against eight big concerns, which are responsible for about half the total output, stand 80 or 90 small works which produce the other half; and no arrangement has yet been come to as to the respective shares.

German Exports Higher

BERLIN GERMANY, Sept. 20.—Exports of iron and steel and wares thereof (omitting machinery) in the first seven months of 1925 totaled 1,903,679 metric tons, and nearly reached the figure for all 1924 (1,955,110 tons). Exports of machinery were 202,494 tons, against 271,484 tons in all 1924.

Sheets.—Thin materials, after the last reductions, maintain prices better. But heavy and medium sheets are weak. Foreign competition is strong, while the export demand, as for home consumption, is small. Prices may be named as follows:

Thomas steel sheets—	Per Metric Ton	Per Gross Ton	Per Pound
1/2 in. and over.....	£6 10s. or	\$31.75 or	1.42c.
3/4 in.	7 2	34.65	1.55
1 in.	8 5	40.25	1.80
1 1/4 in.	8 15	42.70	1.91
Checkered plates	7 0	34.20	1.53

Iron.—Previous Belgian prices were maintained. The higher rates of exchange provoked some business. Ordinary quality is quoted at 112s, i.e., \$27.50. Special quality No. 4 is scarce at about \$34.

Blooms, Billets and Largets (Slabs).—Quantities available are small, as many producers still have their works closed by the strike. Demand became somewhat more important and quotations got immediately firmer. They are, approximately:

Ingots	£3 18s. or	\$19.00
Blooms	4 12	22.45
Billets	4 15	23.20
Slabs	4 18	23.90

Expressed in francs (the rate being 112 fr. for one pound) they are a good deal higher than a fortnight ago. Such prices are not interesting for export.

Pig Iron.—Prices for Luxemburg quality foundry pig iron ran up to 335 and 345 fr. per metric ton, f.o.b. Antwerp or delivered consumer's works. This equals \$15 per gross ton, f.o.b. Antwerp. Somewhat higher prices are, however, foreseen. Belgian makers, who, during the strike sold for export, have now no large quantity to sell. The demand is not so large, but the new prices are easily obtained.

French makers have concluded an arrangement for the sale of their iron in France. As they put their prices for the new syndicate on a higher level, they also increased their quotations for Belgium. Last French prices reached 340 and 345 Belgian fr., being the same price as asked now by Luxemburg makers. Semi-phosphorous foundry iron is quoted 70s. (\$17) f.o.b. Antwerp, this for 2.5 to 3 per cent silicon.

Coke.—The coke market is weak. Demand is insignificant and prices might drop somewhat further.

The first dinner meeting of the 1925-6 season for the metropolitan section of the Taylor Society will be held the evening of Oct. 15 at the Town Hall Club, New York. Dr. Harlow S. Person, managing director of the society, will deliver a paper on the subject of a planning department and its functions.

Gain in September Pig Iron Output

Daily Rate Increases 3632 Tons or 4.2 Per Cent Over August — Eight More Furnaces in Blast

The increase in pig iron output which set in during August continued in September with increasing momentum. The daily rate in September was 3632 tons higher than in August or an increase of 4.2 per cent. In August the increase over July was 1305 tons per day or 1.5 per cent.

The production of coke pig iron for the 30 days in September amounted to 2,726,198 gross one or 90,873 tons per day, as compared with 2,704,476 tons or 87,241 tons per day for the 31 days in August. A year ago the daily rate was only 68,442 tons.

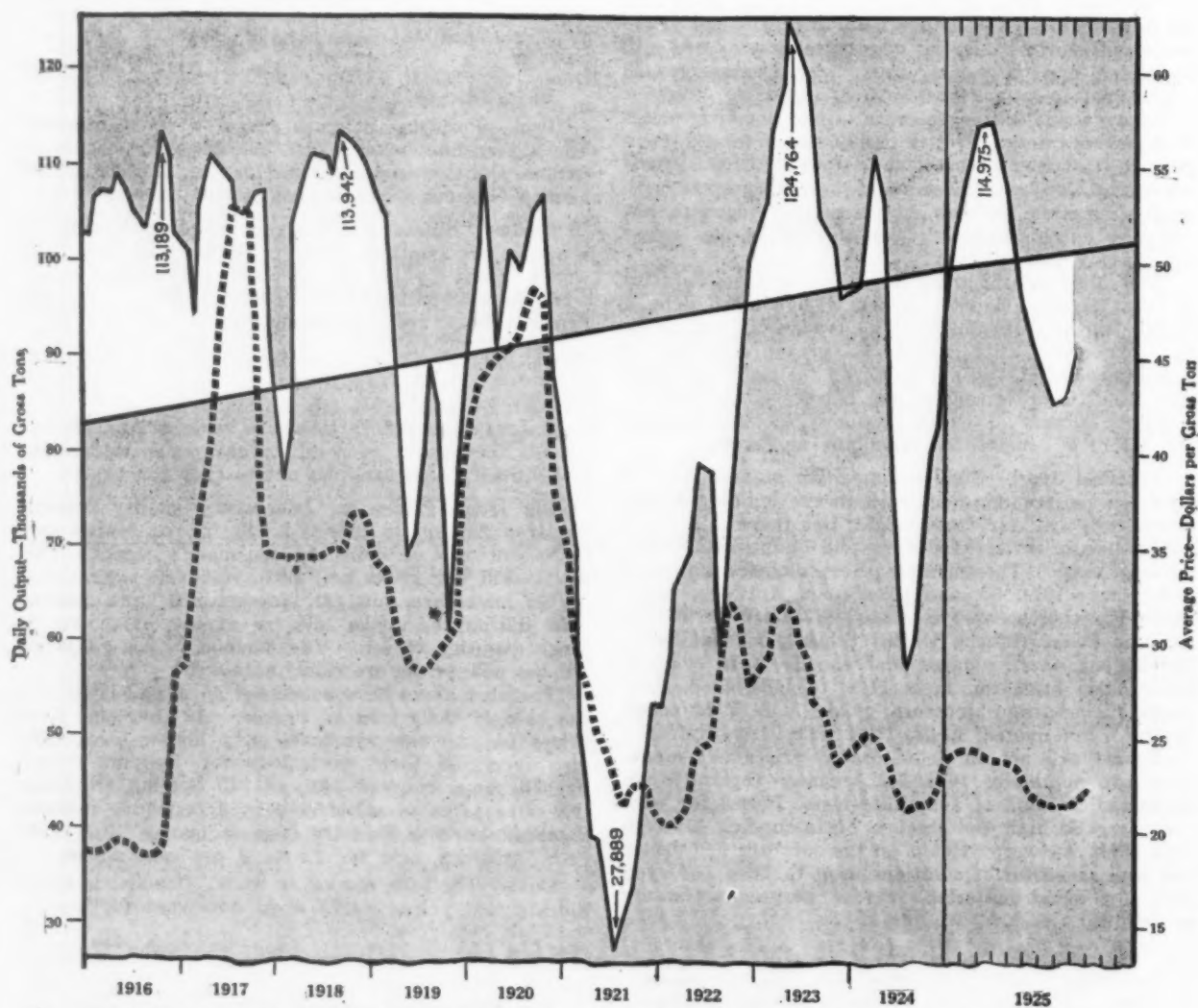
There was a net gain of 8 furnaces in September, 11 having been blown in and 3 blown out or banked. This brings the number active on Oct. 1 to 200, having an estimated daily capacity of 92,050 tons. This contrasts with an estimated capacity of 88,250 tons per day for the 192 furnaces active on Sept. 1. Of the 11 furnaces blown in 4 were Steel Corporation stacks and 4 were those of independent steel companies. The 3 furnaces shut down were equally distributed between the Steel Corporation, the independent steel companies and the merchant furnaces.

Ferromanganese production in September was

18,381 tons as compared with 18,867 tons in August. The September output of spiegeleisen was 5162 tons with the August production 4939 tons.

Among the furnaces blown in during September were the following: G furnace of the Lackawanna plant of the Bethlehem Steel Corporation and one Susquehanna furnace in the Buffalo district in New York; A furnace at the Steelton plant of the Bethlehem Steel Corporation in the Lower Susquehanna Valley; one Carrie and two Edgar Thomson furnaces of the Carnegie Steel Co. and one Alliquippa furnace of the Jones & Laughlin Steel Corporation in the Pittsburgh district; the Claire furnace in the Shenango Valley; one Ohio furnace of the Carnegie Steel Co. in the Mahoning Valley; the Belfont furnace in southern Ohio, and No. 2 Mark furnace at the Indiana Harbor plant of the Youngstown Sheet & Tube Co. in Indiana.

Among the furnaces blown out or banked during September were the following: One Carrie furnace of the Carnegie Steel Co. in the Pittsburgh district; No. 2 Ensley furnace of the Tennessee Coal, Iron & Railroad Co. and one Pioneer furnace of the Republic Iron & Steel Co. in Alabama.



Daily Output in September About 4.2 Per Cent More Than in August; Prices Again Higher
Inclined line represents the gradually increasing theoretical needs of the country, and thus shows production in recent months less than the so-called normal. Dotted line represents the average price in dollars per gross ton of No. 2 Southern at Cincinnati, No. 2 at Chicago and No. 2X at Philadelphia

Production of Coke and Anthracite Pig Iron in United States by Months, Beginning Jan. 1, 1923—Gross Tons

	1923	1924	1925
Jan.	3,229,604	3,018,890	3,370,336
Feb.	2,994,187	3,074,757	3,214,143
Mar.	3,523,868	3,466,086	3,564,247
Apr.	3,549,736	3,233,428	3,258,958
May	3,867,694	2,615,110	2,930,807
June	3,676,445	2,026,221	2,673,457
½ year	20,841,534	17,434,492	19,011,948
July	3,678,334	1,784,899	2,664,024
Aug.	3,449,493	1,887,145	2,704,476
Sept.	3,125,512	2,053,264	2,726,198
Oct.	3,149,158	2,477,127	.....
Nov.	2,894,295	2,509,673	.....
Dec.	2,920,982	2,961,702	.....
Year*	40,059,308	31,108,302	.....

*These totals do not include charcoal pig iron. The 1924 production of this iron was 212,710 tons.

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1921—Gross Tons

	1921	1922	1923	1924	1925
Jan.	77,945	53,063	104,181	97,384	108,720
Feb.	69,187	58,214	106,935	106,026	114,791
Mar.	51,468	65,675	118,673	111,809	114,975
Apr.	39,768	69,070	118,324	107,781	108,632
May	39,394	74,409	124,764	84,358	94,542
June	35,494	78,701	122,548	67,541	89,115
½ year	52,089	66,578	115,147	95,794	105,039
July	27,889	77,592	118,656	57,577	85,936
Aug.	30,780	58,586	111,274	60,875	87,241
Sept.	32,850	67,791	104,184	68,442	90,873
Oct.	40,215	85,092	101,586	79,907	.....
Nov.	47,183	94,990	96,476	83,656	.....
Dec.	53,196	99,577	94,225	95,539	.....
Year	45,325	73,645	109,713	85,075	.....

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant*	Total
September, 1924	50,312	18,130	68,442
October	59,952	19,955	79,907
November	63,230	20,426	83,656
December	76,682	18,857	95,539
January, 1925	86,856	21,864	108,720
February	90,707	24,084	114,791
March	90,741	24,234	114,975
April	83,827	24,805	108,632
May	74,415	20,127	94,542
June	70,452	18,663	89,115
July	65,715	20,221	85,936
August	68,530	18,711	87,241
Sept.	70,300	20,573	90,873

*Includes pig iron made for the market by steel companies.

Production of Steel Companies for Own Use—Gross Tons

	Total Pig Iron—		Spiegelisen and		Ferromanganese*	
	1924	1925	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan. ...	2,274,005	2,692,537	20,735	7,948	23,578	5,418
Feb. ...	2,410,658	2,539,785	22,405	9,870	18,184	4,910
Mar. ...	2,674,565	2,812,995	22,351	13,796	20,062	5,449
Apr. ...	2,463,027	2,514,828	23,580	4,240	21,448	5,341
May ...	1,927,461	2,306,887	14,993	9,336	22,679	5,294
June ..	1,507,110	2,113,566	20,049	9,405	19,836	4,972
½ year ..	13,256,826	14,980,598	124,113	54,595	125,787	31,384
July ...	1,343,952	2,037,160	14,367	15,328	16,614	5,074
Aug. ...	1,413,314	2,124,439	10,718	8,010	18,867	4,939
Sept. ...	1,509,360	2,109,205	13,263	5,033	18,381	5,162
Oct. ...	1,858,502	.....	7,780	10,047	.....	.....
Nov. ...	1,896,886	.....	13,448	8,835	.....	.....
Dec. ...	2,377,141	.....	21,220	5,284	.....	.....
Year ..	23,656,981	.....	204,909	107,132	.....	.....

*Includes output of merchant furnaces.

Pig Iron Production by Districts, Gross Tons

	Sept. (30 days)	Aug. (31 days)	July (31 days)	June (30 days)
New York	148,787	145,631	148,443	137,889
New Jersey .....	.....	.....	.....	.....
Lehigh Valley	77,590	73,174	66,861	63,882
Schuylkill Valley	69,129	70,662	63,803	59,789
Lower Susquehanna and Lebanon Val- leys	29,339	28,986	33,046	32,053
Pittsburgh district	552,496	513,656	471,285	482,870
Shenango Valley	91,009	90,112	90,171	87,773
Western Pa.	87,217	76,587	78,999	101,614
Maryland, Virginia and Kentucky	79,194	76,474	71,287	73,121
Wheeling district	125,199	116,728	110,029	107,738
Mahoning Valley	269,439	277,738	285,278	274,452
Central and North- ern Ohio	319,374	339,622	311,563	309,332
Southern Ohio	32,350	32,841	45,043	43,208
Illinois and Indiana	507,219	508,022	520,666	543,622
Mich., Minn., Mo., Wis., Colo. and Utah	117,230	119,891	137,871	127,631
Alabama	215,597	228,642	224,837	229,453
Tennessee	5,029	5,710	4,842	5,030
Total	2,726,198	2,704,476	2,664,024	2,673,457

Coke and Anthracite Furnaces in Blast

Location of Furnaces	Total Stacks	Oct. 1 In Blast	Oct. 1 Capacity per Day	Sept. 1 In Blast	Sept. 1 Capacity per Day
New York:					
Buffalo	21	12	4,855	10	4,430
Other New York	5	1	300	1	265
New Jersey	4	0	.....	.....	.....
Pennsylvania:					
Lehigh Valley	12	6	2,415	6	2,420
Spiegel	2	1	170	1	160
Schuylkill Valley	15	6	2,300	6	2,280
Lower Susquehanna ..	8	2	845	1	415
Ferromanganese ..	1	1	65	1	65
Lebanon Valley	4	1	205	1	200
Ferromanganese ..	2	1	75	1	70
Pittsburgh District ..	53	35	18,545	32	17,090
Ferro and Spiegel ..	4	2	315	2	320
Shenango Valley	15	7	3,200	6	2,905
Western Pa.	19	6	2,750	6	2,600
Ferro and Spiegel ..	2	1	155	1	155
Maryland	5	5	1,955	5	1,950
Ferromanganese ..	1	0	.....	0	.....
Wheeling District	14	9	4,170	9	3,890
Ohio:					
Mahoning Valley	28	17	9,310	16	8,790
Central and Northern	22	19	10,640	19	10,600
Southern	13	4	1,115	3	895
Illinois and Indiana ..	42	28	17,100	27	16,260
Mich., Wis. and Minn..	12	8	3,050	8	3,050
Colo., Mo. and Utah ..	6	2	850	2	815
The South:					
Virginia	16	2	325	2	360
Ferromanganese ..	1	0	.....	0	.....
Kentucky	7	1	355	1	350
Alabama	35	22	6,820	24	7,730
Ferromanganese ..	1	0	.....	0	.....
Tennessee	12	1	165	1	185
Total	382	200	92,050	192	88,250

JAPAN ROLLS SHEETS

New Mill for Light Gages—Chinese Market Quiet—Pig Iron Imports Increase

NEW YORK, Oct. 6.—The Japanese market is still inactive with small purchases of rails about the only notable feature. The largest of these orders was the recent award of 1560 tons of 100-lb. open-hearth rails by the Imperial Government Railways, the business going to a European mill through Mitsui & Co. at a price said to have been close to \$33 per ton, c.i.f. Japan, compared with the American bid of about \$39 per ton, c.i.f. Another rail purchase placed in Europe was the 6 miles of 94-lb. grooved rails awarded by Tokio municipality to the Phoenix A. G. at Duisburg, Germany. The small lot of boiler tubes asked for by the South Manchuria Railway Co. has not yet been awarded.

Inquiry for light gage black sheets continues limited with little or none of it resulting in business for American sellers of sheets. An explanation of this quietness lies in the fact that in September the Kawasaki Dockyard Co. of Kobe, Japan, placed in operation its new sheet mill and is now rolling black sheets 12 and 13 to the bundle, while heretofore its sheet production has been largely limited to about 10 sheets to the bundle. The Kawasaki quotations on the light gage sheets are equivalent to a c.i.f. price of \$81.50 per ton, or even less than the British market price. When an additional mill is completely installed this company, it is claimed, will have a total sheet capacity of upward of 100,000 tons a year and plans for still further expansion next spring.

Importation of European pig iron seems to be stepping into a position of some importance again. Although several importers of German pig iron report that they are unable at present to quote less than \$21 per ton, c.i.f. Atlantic port, duty paid, there are persistent reports of purchases of foundry iron of German origin, equivalent in grade to No. 2X, at \$20 per ton, duty paid. Dutch iron continues at \$21 to \$21.50 per ton, c.i.f., duty paid, with foundry of Indian origin at about the same price. An outstanding purchase of pig iron made by an American manufacturer of cast iron pipe, covers 20,000 tons placed with Guest, Keen & Nettlefolds, Ltd., London. The iron will be delivered according to reports at the rate of 10,000 tons in October, 5000 tons in November and 5000 tons in January. It is understood to be for the most part high phosphorus foundry grade.

Iron and Steel Markets

CLOSE TO 80 PER CENT

Production Keeps Pace with Demand—Chicago Rail Orders

Pig Iron Output 4 Per Cent Greater—Structural Activity Marked

Steel companies in the Pittsburgh district report some further increase in orders in the past week, and as mill schedules are keeping pace with demand the industry is now close to an 80 per cent operation. At Chicago rail buying and inquiry are now to the front. The week's orders are put at 100,000 tons. Pending inquiry calls for 200,000 tons more, and 250,000 tons are expected to come out in the next few weeks. Track fastening requirements will add 75,000 tons.

While current demand, which comes from diversified industries, continues to be for actual business which manufacturing buyers have in sight, more mills are reporting, particularly in the Central West, that their bookings are running ahead of shipments, and this condition promises to last for several weeks in the heavier products.

Irregularity in prices persists, and it is still true, as it was in August and September, that steel manufacturers are rather striving, with varying success, to maintain the present level than to secure advances. Something is heard, particularly from bar mills, of orders that will support present schedules for a number of weeks, but there is no such drawing out of delivery periods as commonly leads to an advance in prices.

The Illinois Central's rail order for 60,000 tons is the largest of the week. On 175,000 tons for the New York Central bids will be opened Oct. 21. The Pennsylvania Railroad has just specified on 16,000 tons of its 100,000-ton order for this year, and is not likely to buy for 1926 for some months.

Railroad equipment business gives more promise. The St. Louis-San Francisco is inquiring for 1000 cars, the New York Central for 1000 and the Atlantic Coast Line for 500. The Louisville & Nashville has ordered an additional 500 all-steel gondolas, making its total purchases of freight cars within the past two weeks 1750.

Complete returns put the pig iron output in the 30 days of September at 2,726,198 tons, or 90,873 tons a day. For the long month of August the total was 2,704,476 tons, or 87,241 tons a day. Of the gain of 3632 tons a day, or slightly over 4 per cent, steel works furnaces contributed 1770 tons and merchant furnaces 1862 tons.

Active furnaces on Oct. 1 numbered 200, a net gain of eight. Their capacity was 92,050 tons a day, against 88,250 tons a day for the 192 furnaces in blast on Sept. 1.

Since Oct. 1 two Steel Corporation and two Bethlehem furnaces have started up and the corporation is expected to make some further additions to the active list later in the month.

Structural steel lettings continue in heavy volume, indicating that October tonnage may exceed that of September, which was the best month of the year. Awards of the week total 49,000 tons, of which 8000 tons was for the Savoy-Plaza

Hotel, New York, and 6700 tons for a bridge at Pittsburgh. A pending inquiry is for 25,000 to 30,000 tons for a new office building in New York, designed to be the largest in the world.

Specifications for automobile steel have increased within the week. Alloy steels have led in this activity, one large mill being assured full operation far into November.

Demand for wire products that has long dragged is better than in several months, jobbers ordering more freely. But variations in nail prices have not been eliminated.

While the basis for sheet bar deliveries in the fourth quarter is not yet settled, a Northern Ohio sheet mill has bought close to 3500 tons for October at \$33.50, Youngstown, as against \$35 as the third quarter figure.

Inquiry for 10,000 to 20,000 tons, coming from a radiator company that bought 40,000 tons in August, is the feature of the Eastern pig iron market. There is also the reported purchase of 20,000 tons of Welsh pig iron by a Philadelphia cast iron pipe company, 10,000 tons of it to come in in October. Generally pig iron markets are inactive. In the Chicago district foundries are increasing their melt slightly and another blast furnace is blowing in there. It does not appear that large buyers of pig iron in any district have paid the higher prices recently announced by furnace companies.

Some 1500 tons of heavy rails for Japan have just been bought in Europe at a delivered price around \$33, or about \$6 a ton under a low American price. Japan has been for some time a diminishing figure in the American sheet market, after buying 100,000 tons here in a single year. The starting of a new sheet mill at Kobe last month and the proposed higher tariff on foreign sheets will leave little of this trade for the United States.

THE IRON AGE composite price for finished steel remains at 2.403c. per lb., but the pig iron composite advanced to \$19.71 per gross ton from \$19.63 a week ago.

Pittsburgh

Expanding Business and Operations but Little Massing of Backlogs

PITTSBURGH, Oct. 6.—Business in steel continues to expand, but with a corresponding enlargement of productive capacity, there are very few instances where mills are not meeting the exaction as to prompt delivery, and prices consequently are not advanced by the larger bookings. There is not an item in the long list of finished steel products, barring, of course, rails, pipe and tin plate (which have not changed in price for more than two years) that today is carrying a price satisfactory to manufacturers. All are regarded as too low. Establishing advances, however, is proving difficult, because consumers are not buying very far ahead of their actual requirements and manufacturers are generally so dependent on a steady flow of orders to maintain operating schedules that they fear at this juncture to set up a condition that might affect demand.

Delivery promises are becoming more extended in automobile body sheets, and in some sizes of hot-rolled bars there are cases where mills cannot accept

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Oct. 6, 1925	Sept. 29, 1925	Sept. 8, 1925	Oct. 7, 1924
No. 2X, Philadelphia...	\$22.26	\$22.26	\$21.76	\$21.76
No. 2, Valley Furnace...	19.00	19.00	18.50	19.50
No. 2, Southern, Cin'ti...	23.05	23.05	22.55	21.55
No. 2, Birmingham, Ala...	19.00	18.50	18.50	17.50
No. 2 foundry, Chi'go furn...	21.50	21.50	20.50	20.50
Basic, del'd, eastern Pa...	21.00	21.00	20.50	20.00
Basic, Valley furnace...	18.50	18.50	18.00	19.00
Valley Bessemer del. P'gh.	21.26	21.26	20.76	21.76
Malleable, Chicago furn...	21.50	21.50	20.50	20.50
Malleable, Valley	19.00	19.00	18.50	19.50
Gray forge, Pittsburgh...	20.26	20.26	19.76	20.76
L. S. charcoal, Chicago...	29.04	29.04	29.04	29.04
Ferromanganese, furnace...	115.00	115.00	115.00	95.00

Rails, Billets, Etc., Per Gross Ton:	Oct. 6, 1925	Sept. 29, 1925	Sept. 8, 1925	Oct. 7, 1924
O.-h. rails, heavy, at mill...	\$43.00	\$43.00	\$43.00	\$43.00
Bess. billets, Pittsburgh...	35.00	35.00	35.00	36.00
O.-h. billets, Pittsburgh...	35.00	35.00	35.00	36.00
O.-h. sheet bars, P'gh...	35.00	35.00	35.00	37.00
Forging billets, base, P'gh.	40.00	40.00	40.00	42.00
O.-h. billets, Phila...	40.30	40.30	40.30	41.17
Wire rods, Pittsburgh...	45.00	45.00	45.00	46.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	1.90	1.90	1.90	2.00
Light rails at mill...	1.65	1.65	1.60	1.85

Finished Iron and Steel,	Oct. 6, 1925	Sept. 29, 1925	Sept. 8, 1925	Oct. 7, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.12	2.12	2.12	2.32
Iron bars, Chicago...	1.90	1.90	1.90	2.10
Steel bars, Pittsburgh...	2.00	2.00	1.90	2.00
Steel bars, Chicago...	2.10	2.10	2.10	2.00
Steel bars, New York...	2.34	2.34	2.24	2.34
Tank plates, Pittsburgh...	1.80	1.80	1.80	1.80
Tank plates, Chicago...	2.10	2.10	2.10	2.00
Tank plates, New York...	2.04	2.04	2.14	1.94
Beams, Pittsburgh	1.90	1.90	1.90	2.00
Beams, Chicago	2.10	2.10	2.10	2.00
Beams, New York	2.24	2.24	2.24	2.24
Steel hoops, Pittsburgh...	2.40	2.40	2.40	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	Oct. 6, 1925	Sept. 29, 1925	Sept. 8, 1925	Oct. 7, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.10	3.10	3.15	3.50
Sheets, black, No. 28, Chi-				
cago dist. mill...	3.30	3.30	3.30	3.60
Sheets, galv., No. 28, P'gh.	4.20	4.20	4.20	4.60
Sheets, galv., No. 28, Chi-				
cago dist. mill...	4.35	4.35	4.35	4.70
Sheets, blue, 9 & 10, P'gh.	2.25	2.25	2.25	2.70
Sheets, blue, 9 & 10, Chi-				
cago dist. mill...	2.40	2.40	2.40	2.80
Wire nails, Pittsburgh...	2.60	2.65	2.65	2.75
Wire nails, Chicago dist.				
mill	2.70	2.70	2.70	2.85
Plain wire, Pittsburgh...	2.50	2.50	2.50	2.50
Plain wire, Chicago dist.				
mill	2.55	2.55	2.55	2.60
Barbed wire, galv., P'gh...	3.35	3.35	3.35	3.45
Barbed wire, galv., Chic-				
cago dist. mill...	3.40	3.40	3.40	3.55
Tin plate, 100 lb. box, P'gh.	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:	Oct. 6, 1925	Sept. 29, 1925	Sept. 8, 1925	Oct. 7, 1924
Carwheels, Chicago	\$17.00	\$17.50	\$18.00	\$18.00
Carwheels, Philadelphia ..	18.50	18.50	18.50	17.50
Heavy steel scrap, P'gh...	18.00	18.00	19.00	18.00
Heavy steel scrap, Phila...	16.50	17.00	17.50	17.00
Heavy steel scrap, Ch'go...	16.00	16.00	16.75	16.00
No. 1 cast, Pittsburgh...	17.00	17.00	17.50	18.00
No. 1 cast, Philadelphia...	18.00	18.00	18.00	17.50
No. 1 cast, Ch'go (net ton)	17.50	17.75	18.00	17.50
No. 1 RR. wrot. Phila...	18.00	18.00	17.50	18.50
No. 1 RR. wrot. Ch'go (net)	14.00	14.50	16.25	14.50

Coke, Connellsville, Per Net Ton at Oven:	Oct. 6, 1925	Sept. 29, 1925	Sept. 8, 1925	Oct. 7, 1924
Furnace coke, prompt...	\$3.50	\$3.50	\$3.40	\$3.00
Foundry coke, prompt...	4.25	4.25	4.50	4.00

Metals,	Oct. 6, 1925	Sept. 29, 1925	Sept. 8, 1925	Oct. 7, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.50	14.62½	14.87½	13.12½
Electrolytic copper, refinery	14.12½	14.12½	14.50	12.75
Zinc, St. Louis	8.05	7.82½	7.72½	6.20
Zinc, New York	8.40	8.17½	8.08½	6.55
Lead, St. Louis	9.25	9.25	9.25	7.82½
Lead, New York	9.60	9.55	9.60	8.00
Tin (Strait), New York...	60.62½	59.12½	57.75	49.62½
Antimony (Asiatic), N. Y.	17.25	17.25	17.12½	11.00

THE IRON AGE Composite Prices

Oct. 6, 1925, Finished Steel, 2.403c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.	One week ago, 2.403c. One month ago, 2.396c. One year ago, 2.474c. 10-year pre-war average, 1.689c.
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Oct. 6, 1925, Pig Iron, \$19.71 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.	One week ago, \$19.63 One month ago, 19.13 One year ago, 19.46 10-year pre-war average, 15.72
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High	Low
1923 2.824c., April 24 \$30.86, March 20	1923 2.446c., Jan. 20
1924 2.789c., Jan. 15 \$22.88, Feb. 26	1924 2.460c., Oct. 14 \$19.21, Nov. 3
1925 2.560c., Jan. 6 \$22.50, Jan. 13	1925 2.396c., Aug. 18 \$18.96, July 7
Finished Steel	Pig Iron

new business for delivery in less than four weeks. There are no other such cases, however, and with the railroads still rendering wonderfully efficient service, buyers see no occasion for anxiety about their future requirements. While there is some price competition, notably in black sheets and in wire nails, the real competition seems to be in deliveries, and there is no hesitancy now on the part of the manufacturers to put on additional capacity in order to make the deliveries required. Accumulation of backlog business under the circumstances is not easy.

This and nearby districts now are producing ingots close to, if not actually, at 80 per cent of capacity. The Carnegie Steel Co. is somewhat below that rate,

but independent companies by reason of enlarged schedules bring up the average. The Carnegie Steel Co. since a week ago has put on one of its Isabella furnaces and one Carrie furnace, the latter having been blown in today and will be making iron by Thursday. These additions bring the total number of active stacks of that company to 33.

Activity still is lacking in the pig iron market, and the demand for scrap is so slow as to make the dealers wonder if any scrap now is being melted by the steel companies. There is not much real strength in either market. The furnace coke price has grown firmer in the week, but the explanation is found in the sale of some good sized tonnages for other than

metallurgical use and a consequent cleaning up of surplus supplies. There is almost no demand for spot tonnages of coke for blast furnace use, but if there was, the price would be determined by what producers could secure from other sources.

Pig Iron.—There is a fair demand for small tonnages but it is doubtful if the business of the past week has reached as much as 2000 tons in the aggregate. The large users of foundry iron such as the sanitary ware manufacturers and the radiator companies, which among consumers of foundry iron are having the best operation, are all well supplied with iron, and this also seems to be the condition of the makers of railroad castings, who lately have been enjoying some increasing business. Other melters of foundry iron are not crowded with business and of course are sparing buyers. In a general way the advances set up a few weeks ago are holding, but the situation is not altogether free of competition, and the report persists that business is being lost at quotations. The National Radiator Co. has an inquiry out for a round tonnage of foundry iron for its New Castle and Johnstown, Pa., plants but other inquiries are almost entirely for single carloads. The Shenango Furnace Co. will light its No. 2 furnace about Oct. 15. W. P. Snyder & Co. make the average price of Bessemer iron from Valley furnaces in September \$19.27 as compared with \$19 in August, and of basic iron \$18.28 as compared with \$18 the month before.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$18.50
Bessemer	19.50
Gray forge	18.50
No. 2 foundry	19.00
No. 3 foundry	18.50
Malleable	19.00
Low phosphorus, copper free....	\$27.50 to 28.00

Ferroalloys.—Sales of ferromanganese in this district still run to small tonnages, although it would seem, in view of enlarged steel works operations, that consumption must be heavier than it was a short time ago. There is so little difficulty, however, in getting supplies promptly on orders that consumers probably feel safe in merely maintaining their reserves. The price holds firm at \$115, Atlantic seaboard, for either domestic or foreign material. Spiegeleisen is moving well on contracts, but new business is light. Prices show no change. Interest in the higher grades of ferrosilicon is not active. Prices are given on page 999.

Semi-Finished Steel.—The market on billets, slabs and sheet bars is still called \$35, Pittsburgh, but there is hardly enough open market business to prove or disprove that price. It remains a good deal of a mystery how non-integrated sheet makers can pay \$35 per gross ton, Pittsburgh or Youngstown, for sheet bars and sell black sheets at 3.10c., base, per lb. The most plausible explanation seems to be that there is one price on contracts between makers and their regular customers and another for spot tonnages, and the contract price is less than the spot tonnage quotation. Mills here are getting \$35 for billets and slabs from makers of strip steel, but steel for that purpose has almost the same requirements as forging quality steel, for which there is an extra of \$5 a ton over steel of ordinary analysis. There is not much snap to the demand for wire rods, but prices are holding steady on the small lots that are moving. Skelp is quoted at 1.90c., but on worth-while tonnages it is believed this price would be shaded. Prices are given on page 999.

Wire Products.—Business is well up to the recent average, which was sufficient to engage capacity to the extent of from 65 to 70 per cent, and with the exception of nails, the price situation is steady. Wire nails are not selling so well as some makers would like, and in an effort to stimulate activity they have made a price of \$2.60, base, per keg, Pittsburgh. This price has not had formal recognition as a quotation by local mills, but has been met by them where failure to do so would mean the loss of a desirable account. Prices are given on page 998.

Rails and Track Supplies.—Not much standard rail business is yet coming to the local maker. Activity in

light rails also is moderate, although there has been some improvement as compared with the summer demand. The suspension of the anthracite mines has not brought into operation many soft coal mines and coal prices are not yet so profitable that the operators are disposed to spend more for mine supplies than they have to. Small lot buying of spikes and other rail accessories is fairly constant, but no large orders are in sight except 9600 tons of tie plates inquired for by the Northern Pacific Railroad and that business already is conceded to Chicago district mills. Prices show no change. They are given on page 998.

Tubular Goods.—While orders for oil country goods are somewhat fewer and smaller than recently, bookings generally are sufficient with old line pipe orders to keep this branch of the industry operating at about 80 per cent of capacity, and it is thought that this rate can be maintained at least until Nov. 1. The situation in boiler tubes is quite the reverse of that in pipe. Boiler tube productive capacity exceeds the country's requirements to such an extent as to make the scramble among manufacturers to secure orders inevitable. On lap weld steel tubes some makers have quoted as low as 7 fives beyond the card, which means a price of \$70 a net ton for 4-in. tubes, against an indicated card price of \$108. Discounts are given on page 998.

Sheets.—This branch of the steel industry has sufficient business to sustain an operation of approximately 80 per cent of capacity, but the continued softness of prices indicates that there has been a good deal of selling pressure in getting mill operations to that basis. Users of full-finished sheets have been really interested in securing supplies; in other directions, it appears to have been necessary to stimulate interest and in the usual way by price concessions. The greatest weakness has been in black sheets, on which 3.10c., base, lately has become the real maximum on ordinary tonnages, with special prices on especially attractive business. The greatest firmness in prices is noted in automobile body sheets, on which demand is best. In fact, there has been some attempt on the part of consumers to contract for their first quarter requirements, but the mills, expecting to be able to get higher prices for that delivery, are not disposed to entertain such inquiries just now. Higher prices are expected on all finishes for first quarter. Prices are given on page 998.

Tin Plate.—It would be unusual if there were an active market in this product at this season, and this year is not proving an exception, save for the fact that the letdown has been less drastic than in some recent years and really slight with the leading producer. This company has sold the idea of early deliveries to its larger customers and soon will be producing against their early 1926 requirements. Thus there is not so much of a dip in its operating schedules as there was formerly at the end of September. There are no suggestions of a change in prices, although pig tin continues to climb. Savings in other directions probably largely offset the advance in tin since the present price was established, which is a matter of 18c. per lb. and translated to tin plate means an advance of almost 30c. per base box, on a basis of 1.65 lb. of tin per base box of tin plate.

Cold-Finished Steel Bars and Shafting.—There is no cause for complaint on the score of bookings; all makers in this district did a good business last week and with one it was the best week in orders and specifications since last November. The recent \$2 a ton decline appears to have put the market at a level where there is less opportunity to shade prices and still show a profit.

Cold Rolled Strips.—Demand for this product is more notable for its constancy than size. Makers have only about 60 per cent of their capacity engaged, but there is not the tendency noted in some other products to stimulate business and bring more capacity into operation at the expense of prices. The market is firm at 3.75c., base at Pittsburgh or Cleveland.

Bolts, Nuts and Rivets.—Contracts for this quarter

still are coming along in good shape for bolts and nuts, and makers report some increase in current orders and specifications. Prices are very well maintained. Rivets still are slow and easy, and on attractive business makers still are making prices that mean a loss because of their desire to maintain their working organization. Prices and discounts are given on page 999.

Steel and Iron Bars.—Mills in this district are well provided with steel bar business and are getting such good specifications from contract buyers that they are in a position to take a firm stand on prices. On the general run of ordinary tonnages 2c., base, Pittsburgh, now is the ruling price, and there are instances where this price has been secured on fairly attractive tonnages. No small percentage of current shipments, however, carry a price of 1.90c. Iron bars are steady in price, but not especially active. Prices are given on page 998.

Structural Material.—Higher prices than 1.90c., base, Pittsburgh, for large structural shapes still are more of a hope than a reality on sizable tonnages. While structural awards will bulk large, taking the country as a whole, the shops in this district are not crowded with business and this condition reacts upon attempts to stiffen the plain material price. Local awards for the week include 6700 tons for a Pittsburgh bridge. Prices are given on page 998.

Plates.—Local makers are better off on plate business than they have been before in some time. The leading producer is especially well supplied with orders, having a very fair amount of railroad car business in addition to 75,000 tons for a California welded pipe line placed last week. The leading local independent also reports a good order book in plates. But apparently this situation is not true in other producing districts and there is still enough competition for business to keep prices from moving up. Prices are given on page 998.

Old Material.—The market still is slow and easy. One point against which shipments were held up is again taking material, but there is not enough demand nor opportunity to ship current offerings to enable dealers to take a firm stand on prices. The railroad lists are giving dealers something to worry about, particularly those of the Pennsylvania Railroad. That road insists on shipping instructions in 10 days and it is necessary for the successful bidder to provide them. It consigned to a plant without an order, the price is apt to be less than cost, and the other alternative is to order the material to the yard and the expense is too great for such a course. It is a buyers' market. The Pennsylvania Railroad October scrap list contains 35,822 net tons, bids closing Oct. 7 at noon.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel	\$18.00 to \$18.50
No. 1 cast, cupola size	17.00 to 17.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	20.00 to 20.50
Compressed sheet steel	17.00 to 17.50
Bundled sheets, sides and ends ..	16.00 to 16.50
Railroad knuckles and couplers ..	20.50 to 21.00
Railroad coil and leaf springs ..	20.50 to 21.00
Low phosphorus blooms and billet ends	23.00 to 23.50
Low phosphorus plate and other material	21.50 to 22.00
Low phosphorus punchings	20.00 to 20.50
Railroad malleable	18.50 to 19.00
Steel car axles	20.50 to 21.00
Cast iron wheels	17.00 to 17.50
Rolled steel wheels	20.50 to 21.00
Machine shop turnings	14.00 to 14.50
Short shoveling turnings	14.00 to 14.50
Sheet bar crops	19.00 to 19.50
Heavy steel axle turnings	16.50 to 17.00
Short mixed borings and turnings ..	13.50 to 14.00
Heavy breakable cast	15.00 to 15.50
Stove plate	13.50 to 14.00
Cast iron borings	14.00 to 14.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	18.00 to 18.50

Hot Rolled Flats.—There is a good demand for these lines and some makers are finding it necessary to put on additional mills to get the material out as promptly as it is desired. There is no question about the firmness of the market at quotations and there are

frequent intimations that higher prices soon will be sought. It is claimed that present prices are not profitable and an advance of \$2 a ton is thought likely. Prices are given on page 998.

Coke and Coal.—The market on furnace coke is stronger to the extent that offerings are not so large as they were recently. This comes about as a result of the fact that producers, unable to sell the coke for metallurgical purposes, have broken it up and have found sale for it as crushed coke. Sales of furnace coke under this guise have been made anywhere from \$3.50 to \$4.25 per net ton at ovens, but the lower price represents about as much as could be obtained from blast furnace operators. There is only a moderate demand for foundry coke, and prices do not change. The demand for soft coal is no strain on the supply, and prices still are low. Prices are given on page 999.

Carnegie to Add 12-in. Bar Mill at McDonald Works

The Carnegie Steel Co. is asking bids for parts for a new 12-in. bar mill to be installed at the McDonald works, Trumbull County, five miles west of Youngstown, Ohio. Last week the company started a 10-in. mill, and has under construction a 14-in. unit which will be completed around the first of the year. The installation of these mills will complete the original layout designed for the McDonald works, of nine bar, band and hoop mills. With the additional bar capacity at the Upper and Union Works, Youngstown, the district will have, it is believed, the largest bar mill capacity of the Steel Corporation.

Sale to Terminate St. Louis Coke & Iron Co. Receivership

In order that receivership may be terminated and the way paved for its reorganization, the properties of the St. Louis Coke & Iron Co., Granite City, Ill., will be offered for sale Oct. 20, by Edward P. Allen, special master in chancery. The company's properties are valued at \$12,000,000 and the plans for reorganization contemplate \$3,000,000 in improvements and plant expansion. It is understood that the bondholders will bid in the property when it is offered for sale.

Increased Weakness in Detroit Scrap Market

DETROIT, Oct. 6.—The week has shown increased weakness in blast furnace material as two important users of scrap from this district are not accepting shipments. Machine shop turnings and hydraulic compressed are particularly affected although price changes are not important. The situation is so evenly balanced that the resumption of shipments by even one important melter would result in an immediate stiffening of prices.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate. No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$14.25 to \$14.75
Borings and short turnings	11.25 to 11.75
Long turnings	10.00 to 10.50
No. 1 machinery cast	15.00 to 16.00
Automobile cast	21.00 to 22.00
Hydraulic compressed	13.00 to 13.50
Stove plate	12.50 to 13.00
No. 1 busheling	12.75 to 13.25
Sheet clippings	8.75 to 9.25
Flashings	12.00 to 12.50

September, usually a rather dull month in the metal furniture trade, produced this year 30 per cent more gross business for the General Fireproofing Co. than was developed in the same month last year. The company is operating its plant at Youngstown at a rate above 95 per cent.

Chicago

Heavy Rail Buying—Pig Iron Deliveries Tighten and Furnace Will Go In

CHICAGO, Oct. 6.—Local producers have experienced an active week in standard steel rails, as indicated by bookings of approximately 100,000 tons. Pending inquiry calls for an additional 200,000 tons and about 250,000 tons are expected to come out within the next few weeks. This buying of rails will be accompanied by the usual track fastening requirements, which for the tonnages indicated will total about 75,000 tons. Taking all products as a whole, inquiries for the past week exceeded any like period so far this year. Users are asking for immediate shipment and there is a noticeable increase in the interest on the part of jobbers who are now taking tonnage more freely in anticipation of a better buying movement later. Mill bookings are running well ahead of shipments, one local producer reporting that new commitments during the past week were fully 50 per cent in excess of shipments. There appears to be no tendency to load up books and buying, which is emanating largely from a widely diversified industrial field, is for actual requirements which are now in sight.

Shipments of pig iron during September were in greater volume than for any month since 1920.

Pig Iron.—Merchant pig iron production is to be increased this coming week by the blowing in of the No. 4 Iroquois stack. This is necessary because the melt of foundries has exceeded what was expected when contracts and delivery schedules were arranged for earlier in the year. Stocks at the furnaces are unusually low, and prompt shipment demands cannot be filled from that source. In many instances melters have found that their supplies of certain grades of iron will carry them less than four weeks, and they are now confronted with a tightening delivery situation. The price for Northern iron is firm at \$21.50 for both fourth and first quarter delivery. One Chicago user has taken 500 tons of foundry, and two Michigan inquiries are out for 500 tons each, one being for fourth quarter delivery and the other for first quarter. Silvery has again advanced and is now bringing \$27.50, Jackson County, for the 8 per cent grade. The freight rate on this commodity is \$4.79, making the delivered price \$32.29. Local sellers report that approximately 3500 tons have been booked for fourth quarter delivery to both Chicago and Michigan users. Low phosphorus grades are quiet, and the price situation remains unchanged. On the other hand, charcoal iron is in greater demand, and it is the general impression that furnace stocks of this commodity are low, and that an advance in price may be looked for when first quarter buying becomes more extensive. A Chicago melter has contracted for 400 tons for the fourth quarter. Several inquiries for fair sized tonnages are pending.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.50
Northern No. 1 foundry, sil. 2.25 to 2.75	22.00
Malleable, not over 2.25 sil.	21.50
High phosphorus	21.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	\$25.51 to 26.01
Southern No. 2 (barge and rail)	23.68
Low phos., sil. 1 to 2 per cent, copper free	31.10 to 31.60
Silvery sil. 8 per cent.	32.29
Ferrosilicon, 14 to 16 per cent.	45.25 to 45.75

Ferroalloys.—No change has occurred either in demand or prices. It is reported that a Japanese importer has brought about 8000 tons of 75 per cent ferromanganese into the market for which he is asking \$101.50. If his minimum is guaranteed at 75 per cent it is at best 5 points less than is ordinarily specified.

We quote 80 per cent ferromanganese, \$122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$39.76 to \$40.04, delivered.

Plates.—Railroad car buying is still light and the steel for a number of orders recently placed has not yet been contracted for. New inquiries which appeared during the week were impressive neither in number nor in size and do not support the trade in its hope for more active buying of railroad equipment. New inquiries, which will require approximately 20,000 tons of plates, shapes and bars, include 500 composite gondolas for the St. Louis-San Francisco, 500 composite gondola cars for the Atlantic Coast Line and 1000 box cars for an unnamed railroad. Twelve hundred tons of steel will be required for the construction of oil storage tanks in the Arkansas fields for the Roxana Petroleum Corporation. Inquiry for tanks is light for the reason that the consumption of petroleum products has been running ahead of production, thus making available a surplus of storage capacity. Mill prices remain steady at 2.10c., Chicago.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Bars.—The demand for mild steel bars continues at an unabated rate, and some mills are now booked until the first of the year. Automobile manufacturers are still a substantial factor in the market, and a large share of current tonnage is being taken by farm implement manufacturers, forging plants and the electrical industry. Soft steel bars remain steady at 2.10c., Chicago. There is no indication that rail steel bars mills have slackened their pace. Considerable tonnage is still being sold for reinforcing purposes, and the industrial demand is well maintained. Rail steel bars are unchanged at 2c., Chicago, although an occasional sale at a somewhat higher figure is reported. Slightly increased interest is being shown in bar iron, although as yet mill operations are far from satisfactory. Several sales of fair tonnage are reported within the price range of 1.90c. to 2c., Chicago. Undiminished demand for alloy steel bars is indicated in the operations of the local independent producer, which are still at 100 per cent.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 1.90c. to 2c., Chicago; rail steel bars, 2c., Chicago, and 2c., mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

Wire Products.—Both buying and specifying were slightly heavier during the past week, and September closed with a net gain in bookings of about 10 per cent over August. Manufacturing customers are contracting more freely for their fourth quarter requirements. Mill prices, which remain unchanged, are shown on page 998.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, \$3.05 per 100 lb.; common wire nails, \$3.15 per keg; cement coated nails, \$2.15 to \$2.20.

Rails and Track Supplies.—Approximately 100,000 tons of rails has been booked in this territory, and it is generally estimated that about 200,000 tons is being actively inquired for. Another 200,000 to 300,000 tons is expected to come before the trade within the next few weeks. The tie plates, angle bars, spikes and bolts, which will be required for the total rail tonnage, will aggregate close to 75,000 tons. Bookings and inquiry for both light rails and iron tie plates are in fair volume. Prices on rails and track supplies are unchanged in Chicago territory.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.25c. to 2.35c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and tracks bolts 4.55c. base.

Sheets.—Deliveries, as a general rule, range between four and five weeks from local mills and demand has shown a slight improvement. Buyers are taking this commodity at a rate approximating their immediate requirements, and there are indications that in some instances they are entertaining propositions

from Eastern producers who can make prompt delivery at this time.

Chicago delivered prices from mill 3.35c. to 3.40c. for No. 28 black, 2.45c. to 2.50c. for No. 10 blue annealed and 4.40c. to 4.45c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.50c. base for blue annealed, 4c. base for black, and 5c. base for galvanized.

Structural Material.—Structural lettings were the heaviest for any week so far this year. Mill bookings were also in good volume and have been exceeded but once this year. The American Bridge Co. will fabricate 2100 tons of steel for miscellaneous types of bridges for the Great Northern Railway. The Gage Structural Steel Co. has received the contract for 1200 tons for the Piccadilly Theater, Chicago, and the St. Louis Structural Steel Co. will fabricate 900 tons for the Za-Ga-Zig Shrine Temple, Des Moines, Iowa. It is anticipated that contracts for the Lake Shore Athletic Club, Chicago, 3500 tons, and the Chicago, Burlington & Quincy postal sub-station, Omaha, 1000 tons, will be let this coming week. Structural shops are well booked; in fact, one of the largest fabricators has sufficient work on hand to employ its full force for a period of three months. Mill prices on plain material are unchanged at 2.10c., Chicago.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bolts, Nuts and Rivets.—No changes have taken place in prices. Contracting for fourth quarter delivery is going forward without hesitancy, and operations by manufacturers are being maintained at the same rate as in September.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to $\frac{3}{4}$ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to $\frac{3}{4}$ x 4 in., 50 off; larger sizes, 50 off; hot-pressed nuts, squares, tapped or blank, \$3.50 off; hot-pressed nuts, hexagons, tapped or blank, \$4 off; coach or lag screws, 60 per cent off.

Cast Iron Pipe.—Pipe foundries continue to operate at an unchanged rate, and deliveries remain at from 45 to 60 days. A fair part of the demand is coming from the smaller municipalities. With delivery dates well extended and the winter months near at hand, it is apparent to the trade that a number of contracts will have to be carried over into next year. In fact, it is believed that the tonnage carried over will greatly exceed that which was brought forward into 1925. Alliance, Ohio, placed a contract with James B. Clow & Sons for 570 tons of Classes C and D pipe, ranging in size from 4-in. to 24-in. The American Cast Iron Pipe Co. will supply 600 tons of 6-in. Class B to Calumet City, Ill. Inquiries during the week were numerous, although for the most part small in tonnage. Mattoon, Ill., is inquiring for 250 tons of 12-in. Class B, and Mundelein, Ill., will receive tenders for 300 tons of 6-in. Class B. Prices are unchanged at \$41 to \$42, base Birmingham, for 6-in. and larger sizes.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$53.20 to \$54.20; 6-in. and over, \$49.20 to \$50.20; Class A and gas pipe, \$4 extra.

Coke.—By-product foundry coke remains firm at the advance of 50c., which went into effect during the week of Oct. 1, the price being \$10.75, delivered in the Chicago switching district. Domestic, or crushed, coke advanced 25c. a ton on Oct. 1, and is now quoted at \$9, delivered in the Chicago switching district.

Reinforcing Bars.—September was an active month in reinforcing bar business and will compare favorably with any other like period during the year. Pending tonnage is unusually large and would ordinarily augur for a continuance of the present rate of activity. With the winter season near at hand, however, it is probable that some projects will have to be carried over until next spring unless contractors place their steel requirements within the next 30 days. Warehouse prices on billet steel reinforcing bars are steady at 2.60c., Chicago. Lettings include:

Vocational school, Oshkosh, Wis., 250 tons to the American System of Reinforcing.

Phillip W. Peck, building, 510 South Wabash Avenue, Chicago, 450 tons to the Truscon Steel Co.

Illinois Masonic Hospital, 834 Wellington Avenue, Chicago, 115 tons to the Truscon Steel Co.

Picadilly Theater, Chicago, 630 tons of rail steel to the Calumet Steel Co.

Abraham Lincoln School, Rockford, Ill., 100 tons to the Concrete Engineering Co.

Wieboldt Hall, Northwestern University, Chicago, 400 tons to the Truscon Steel Co.

Singer Building, State Street, Chicago, 100 tons to Olney J. Dean & Co.

Commodore Apartments, Melrose Street, west of Sheridan Road, Chicago, 100 tons of rail steel to Calumet Steel Co.

Pending work includes:

Commonwealth Edison Co., section of switch house, Crawford Avenue, Chicago, 100 tons. General contract awarded to G. F. Mayne.

Hospital, Freeport, Ill., 100 tons, general contract to James P. Collen & Son, Janesville, Wis.

Morrow Garage, Waukegan, Ill., 175 tons.

Wrigley Garage, State and Kinzie Streets, Chicago, 100 tons. General contract awarded to Dahl-Stedman Co.

Y. M. C. A. Hotel, South Wabash Avenue, Chicago, 225 tons.

McCormick Estate Building, Lake Street and Michigan Avenue, Chicago, 400 tons.

Frank Compton Building, 1002 North Dearborn Street, Chicago, 150 tons, J. A. Armstrong, architect.

Addition to gymnasium, Waukegan High School, Waukegan, Ill., 200 tons.

Paradise Theater, Chicago Avenue and Park Street, Chicago, 100 tons.

Thomas Jefferson High School, Indianapolis, 275 tons.

West Side High School, Indianapolis, 275 tons.

Hotel Hayes, Jackson, Mich., 400 tons.

Junior High School, Muskegon, Mich., 100 tons.

Bell Telephone Building, Cleveland, 400 tons.

Y. M. C. A., Irving Park, Chicago, 165 tons, Schmidt Bros. Construction Co., general contractors.

Y. M. C. A. building, Roseland, Ill., 165 tons. General contract awarded to Schmidt Bros. Construction Co.

Old Material.—Buying of any considerable tonnage of scrap has not made its appearance, and at the same time a number of distress cars are daily coming on track, with the net result that prices of many grades have again lost ground. There is an insistent rumor that dealers are fairly well stocked, and that with the exception of a few grades, they will sacrifice incoming tonnage rather than place it in their yards. Congestion at the mills is slightly relieved, although reports are still current that dealers are being requested from time to time to defer shipments. Railroad lists include: Pennsylvania Railroad, 35,000 tons; Sante Fe, 4100 tons; Chicago & Eastern Illinois, 1000 tons; Chicago & Alton, 1800 tons, and the St. Paul, 1500 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	\$18.00 to \$18.50
Cast iron car wheels	17.00 to 17.50
Relaying rails, 56 lb. to 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	19.00 to 19.50
Railroad tires, charging box size	19.00 to 19.50
Railroad leaf springs, cut apart	19.00 to 19.50
Rails for rolling	18.50 to 19.00
Steel rails, less than 3 ft.	19.50 to 20.00
Heavy melting steel	16.00 to 16.25
Frogs, switches and guards, cut apart	17.50 to 18.00
Shoveling steel	15.75 to 16.00
Drop forge flashings	12.00 to 12.50
Hydraulic compressed sheets	13.75 to 14.25
Axle turnings	13.50 to 14.00
Steel angle bars	18.50 to 19.00
Steel knuckles and couplers	18.50 to 19.00
Coil springs	19.50 to 20.00
Low phos. punchings	18.00 to 18.50
Machine shop turnings	9.50 to 10.00
Cast borings	12.75 to 13.25
Short shoveling turnings	12.75 to 13.25
Railroad malleable	18.50 to 19.00
Agricultural malleable	18.00 to 18.50

Per Net Ton

Iron angle and splice bars	18.25 to 18.75
Iron arch bars and transoms	20.75 to 21.25
Iron car axles	26.50 to 27.00
Steel car axles	17.50 to 18.00
No. 1 busheling	12.50 to 13.00
No. 2 busheling	9.00 to 9.50
Pipes and flues	11.00 to 11.50
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	14.25 to 14.50
No. 1 machinery cast	17.25 to 17.75
No. 1 railroad cast	16.75 to 17.25
No. 1 agricultural cast	16.50 to 17.00
Locomotive tires, smooth	16.50 to 17.00
Stove plate	14.50 to 15.00
Grate bars	14.25 to 14.75
Brake shoes	14.00 to 14.50

New York

Large First Quarter Pig Iron Inquiries— Structural Awards Heavy

NEW YORK, Oct. 6.—The American Radiator Co., often regarded as the bell wether of the pig iron market, has entered the market for 10,000 to 20,000 tons of foundry iron for first quarter delivery to its Bayonne, N. J., plant. Most of the large buyers have closed for their fourth quarter needs and up to date little inquiry for more extended shipment had appeared. Another large new inquiry comes from the National Radiator Co. and calls for 2500 tons of foundry for fourth quarter and 4000 tons for first quarter. The Louis Sacks Iron Foundry, Newark, N. J., is in the market for 600 tons of No. 2X and 125 tons of malleable for first half, while Moore Brothers, Elizabeth, N. J., want 200 to 400 tons of Bessemer and a like quantity of No. 1X for delivery during the current quarter. The Ingersoll-Rand Co. has divided 3300 tons for its Phillipsburg, N. J., and Painted Post, N. Y., plants between Buffalo and eastern Pennsylvania furnaces. The Richmond Radiator Co. placed 2000 tons for its Uniontown, Pa., plant with a western Pennsylvania producer at \$19, base, furnace, the freight rate being \$1.64. The American Locomotive Co. has closed for 1000 tons of low phosphorus for its Chester, Pa., plant with the Delaware River Steel Co. Sales to New York buyers during the past week are estimated at 15,000 tons, less than was contracted for in the previous week. It is notable, however, that small buyers have been more active and are placing considerable spot tonnage. Sales of No. 1X Dutch foundry for first quarter have been made at \$22, duty paid New York. It now seems probable that the Troy, N. Y., furnace will not blow in before Dec. 1. Prices are unquestionably stronger, with \$21, base, eastern Pennsylvania furnace, and \$19, base, Buffalo, ruling prices except on very attractive tonnages. Virginia iron has advanced to \$24, furnace.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	\$23.02 to \$23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.52 to 24.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	24.02 to 24.52
Buffalo, sil. 1.75 to 2.25 (all rail)	23.41 to 23.91
Buffalo, sil. 1.75 to 2.25 (by barge canal del'd alongside in lighterage limits N. Y. and Brooklyn)	21.25 to 21.75
No. 2 Virginia, sil. 1.75 to 2.25	29.54

Ferroalloys.—There have been sales of a few carload and small lots of ferromanganese in the last week and there is at present before the market inquiries totaling several hundred tons, one of which is for 200 to 300 tons. Moderate sales of spiegeleisen have been made at unchanged prices. Current demand for 50 per cent ferrosilicon and for standard ferrochromium, outside of specifications on contract, is light.

Warehouse Business.—While September proved to be a better month than August with most warehouses in this district, July still stands as about the best month of the year with many jobbers. Quotations on structural material and black and galvanized sheets continue anything but firm. The schedule of 3.24c. on bars and 3.34c. per lb. on shapes is applicable principally to the exceedingly small lots. Prices are quoted on page 1018. We quote boiler tubes per 100 ft., as follows:

Lap welded steel tubes, 2-in., \$17.33; seamless steel, 2-in., \$20.24; charcoal iron, 2-in., \$25; 4-in., \$67.

Finished Iron and Steel.—Structural steel business continues the outstanding feature of steel buying. In the past week awards for buildings in the metropolitan area have exceeded 25,000 tons, which includes 8000 tons for the Savoy-Plaza Hotel and 3000 tons for the Harriman Building, both Fifth Avenue projects. An office building adjoining the Grand Central Terminal, which, it is said, will be the largest office building in the world, has come into the market and will call for 25,000 to 30,000 tons. September was

the record month of the year with some structural mills and steel fabricators and October has started out with great promise of equaling it. From the mill viewpoint the only unsatisfactory feature of the present situation is the weakness of some prices. Plates continue to drag, so much so that Pittsburgh mills, quoting 1.80c., are entirely out of the running as Eastern mills will take ordinary orders at 1.70c. and 1.75c., Pittsburgh, while on 2000 tons, either placed or about to be placed by the American Locomotive Co., better than 1.70c. is reported to have been quoted. With some mills structural shapes have strengthened. Bars likewise are fairly firm at 2c., Pittsburgh. In wire nails, cold finished steel and sheets there is still weakness. Most mills are now selling carload lots of bright nails at 2.60c., Pittsburgh. A mill which is sold up for eight weeks on black sheets is quoting 3.15c., Pittsburgh, and is getting that price on whatever it sells now, but other mills will sell at 3.10c. The range on blue annealed is from 2.20c. to 2.30c. and on galvanized 4.20c. is obtainable from several mills, though some again quote 4.30c., Pittsburgh.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c.; plates, 2.04c. to 2.09c.; structural shapes, 2.14c. to 2.24c.; bar iron, 2.14c. to 2.24c.

Cast Iron Pipe.—The Board of Estimate and Apportionment, New York, has decided to award the pipe, fittings and fire hydrants on which the Gelsenkirchener Bergwerks, a German maker, was low on six of the 15 sections, to the lowest American bidders. These include the United States, Warren, Fox, Florence, Talladega, Flockhart, Vogt Brothers, Feils, A. P. Smith and the American Foundry & Mfg. companies.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$50.60 to \$51.60; 4-in. and 5-in., \$55.60 and \$56.60; 3-in., \$65.60 to \$66.60, with \$5 additional for Class A and gas pipe. Discounts of both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 45 to 50 per cent off list; heavy, 55 to 60 per cent off list.

Coke.—Dealers in coal and coke for domestic use are reported purchasing a large volume on a rapidly rising market. By-product is bringing \$8 to \$8.50 per net ton at the ovens with Connellsville bringing \$6.50 to \$7, oven. Despite this active demand, which is said to be causing some makers to turn ovens over to production for this market, foundry grades continue at \$4.75 to \$5.50 per ton and by-product is unchanged at \$10.41 per ton, delivered Newark or Jersey City, N. J.

Old Material.—Although the market exhibits weakness, prices reflect a downward trend in only a few instances. No. 1 heavy melting steel is still being purchased by brokers at \$16 to \$17 per ton, delivered eastern Pennsylvania, but several brokers who have been offering up to \$17 for certain delivery have reduced their buying prices as much as 50c. per ton. Specification pipe is generally off 50c. per ton, \$16.50, delivered to an eastern Pennsylvania user being the top price paid. Machine shop turnings are also down about 50c. per ton, brokers offering only \$13.50 per ton, delivered Phoenixville or Harrisburg, Pa., and bundled skeleton is also off 50c. on eastern Pennsylvania deliveries.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	\$11.50 to \$12.00
Heavy melting steel (railroad or equivalent)	13.00 to 13.50
Rails for rolling	14.25 to 14.75
Relaying rails, nominal	23.00 to 24.00
Steel car axles	21.50 to 22.00
Iron car axles	24.00 to 24.50
No. 1 railroad wrought	14.50 to 15.00
Forge fire	10.00 to 10.75
No. 1 yard wrought, long	13.50 to 14.00
Cast borings (steel mill)	9.75 to 10.25
Cast borings (chemical)	13.50 to 14.00
Machine shop turnings	10.00 to 10.50
Mixed borings and turnings	9.75 to 10.25
Iron and steel pipe (1 in. diam., not under 2 ft. long)	12.25 to 12.75
Stove plate	10.50 to 12.00
Locomotive grate bars	11.00 to 11.50
Malleable cast (railroad)	15.00 to 15.50
Cast iron car wheels	14.00 to 14.50
No. 1 heavy breakable cast	13.50 to 14.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	\$18.00 to \$18.50
No. 1 heavy cast (columns, building material, etc.), cupola size	16.50 to 17.00
No. 2 cast (radiators, cast boilers, etc.)	15.50 to 16.00

San Francisco

Mokelumne Construction Starts Nov. 1— Market Quiet—Inquiries Better

SAN FRANCISCO, Oct. 3 (*By Air Mail*).—Construction work on the Mokelumne River water supply system is expected to start early in November. Since the contracts were awarded a week ago, the directors of the East Bay Municipal Utility District, Oakland, Cal., have voted to sell \$5,000,000 worth of bonds to finance the preliminary construction. No work can be started, however, until hearings on water rights, now in progress at Sacramento before State and Federal authorities, have been concluded, and a permit formally issued to the utility district. By many this is regarded as a mere matter of formality, but in certain quarters the hearings at Sacramento are looked upon as the forerunner of obstructive litigation. There has been a good deal of speculation during the week about the probable price named on the 75,000 tons of plates required for the pipe line. Although verification is lacking, the consensus of opinion locally is that this business was closed at about 2.10c. to 2.15c., c.i.f. Coast ports, which is equivalent to 1.80c. to 1.85c., Pittsburgh. There are many who regard this job as the "first official test" of electrically welded pipe. As the engineers' report states, "this is the largest pipe and the largest job upon which electrically welded pipe has ever been used." The pipe will be from 63 in. to 66 in. in diameter.

Business during the week has been relatively quiet. No outstanding features have developed, although inquiries have been somewhat more numerous. The price situation is virtually unchanged, and there are few indications of strengthening tendencies.

Pig Iron.—The Whiting-Mead Commercial Co., Los Angeles, is understood to be in the market for about 1000 tons of 2.75 to 3.25 per cent silicon pig iron. About 120 tons of Japanese foundry iron and 25 tons of Chinese foundry have been received by two local importers, who have replied to inquiries regarding prices by stating that the iron is not for sale. The last quotation on Chinese iron, known to have been made in San Francisco, was last May, at which time the figure named was \$22.50, duty paid, incoming dock. No business of any consequence is known to have been booked at that time. Prices on domestic and European irons are unchanged.

*Utah basic	\$27.00 to \$28.00
**Utah foundry, sil. 1.75 to 2.25	27.00 to 28.00
..English foundry	26.00
..Belgian foundry	24.50 to 25.00
..Dutch foundry	24.00
..Indian foundry	24.00
..German foundry	25.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Awards reported to have been closed during the week total 1358 tons. Fresh inquiries call for 4400 tons. The largest letting, 800 tons, for the Calaveras Cement Co. plant at San Andreas, Cal., has been taken by the Minneapolis Steel & Machinery Co. The Wallace Equipment Co. has booked 237 tons for a newspaper office building at Bellingham, Wash., and 167 tons for the Puyallup River Bridge on State Road No. 5 near Tacoma, Wash. The largest inquiry is 2400 tons for the Boulevard Hotel in Oakland. An export firm has come into the market for 1400 tons, and the Border Line Highway Bridge, across the Gila River, between California and Arizona, will require about 500 tons. Prices are unchanged at 2.30c. to 2.35c., c.i.f. Coast ports.

Plates.—Lettings for the week total 925 tons. The Pacific Coast Engineering Co. has taken 500 tons of dredge pipe for a local dredging company, and the Steel Tank & Pipe Co. has taken 225 tons for tank work for the Pan-American Petroleum & Transport Co. in San Pedro, and 100 tons for small tanks for the Associated Oil Co. in Salinas. Bids on 1500 tons required by the San Joaquin Light & Power Co., Fresno, have been postponed from Oct. 15 to Nov. 1. Prices continue weak at 2.25c. to 2.30c., c.i.f. Coast ports.

Bars.—Reinforcing bar jobbers continue to quote a

widely varying price on out-of-stock material. A quotation of 2.45c. on a fair sized tonnage from stock is rumored to have been made recently by a local jobber, but verification is lacking. While some of the jobbers are of the opinion that this quotation is unusually low for an out-of-stock quotation, even for mill lengths, they concede that "it is not altogether surprising." Quotations of 2.65c. to 2.75c. on mill lengths from jobbers' stocks have been named during the week, although 2.80c. to 2.85c. is more general. On large size tonnages, cut to length, 2.90c. to 3c. is being quoted, but these figures have been frequently shaded. On small sized orders, cut to length, 3.30c. to 3.35c., is general. Among recent reinforcing bar lettings are the following:

Salmon River bridge, Salmon River, Idaho, 112 tons, to unnamed company.

Edenburg, Texas, for flood control work, 375 tons, to unknown firm.

Atlantic, Gulf & Pacific Co. of Manila, San Francisco, Cal., 167 tons, to unnamed company.

South San Joaquin Irrigation District, Manteca, Cal., 100 tons, to two unnamed San Francisco jobbers.

Hotel and store for the St. Clair Realty Co., San Jose, Cal., 230 tons, to unnamed San Francisco jobber.

Rails and Track Supplies.—The Key System Transit Co., Oakland, has placed 250 kegs of track spikes with the Bethlehem Steel Co., and has yet to place 100 tons of 70-lb. rails. The Board of Public Works, San Francisco, has received bids for 1300 tons of used miscellaneous rails and track materials.

Warehouse Business.—Little of consequence has developed, although jobbers report a slightly better volume. September sales, generally, ran ahead of orders booked a year ago. Prices are steady.

Merchant bars, \$3.30 base, per 100 lb.; merchant bars, $\frac{3}{4}$ in. and under, rounds, squares and flats, \$3.80 base, per 100 lb.; soft steel bands, \$4.15 base, per 100 lb.; angles, $\frac{1}{4}$ in. and larger x $1\frac{1}{2}$ in. to $2\frac{3}{4}$ in., inc., \$3.30 base, per 100 lb.; channels and tees, $\frac{3}{4}$ in. to $2\frac{3}{4}$ in., inc., \$3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, \$3.30 base, per 100 lb.; tees, 3 in. and larger, \$3.30 base, per 100 lb.; universal mill plates, $\frac{3}{4}$ in. and heavier, stock lengths, \$3.30 base, per 100 lb.; spring steel, $\frac{1}{4}$ in. and thicker, \$6.30 base per 100 lb.; wire nails, \$3.50 base, per 100 lb.; cement coated nails, \$3 base, per 100 lb.; No. 10 blue annealed sheets, \$3.70 per 100 lb.; No. 28 galvanized sheets, \$5.75 per 100 lb.; No. 28 black sheets, \$4.65 per 100 lb.

Cast Iron Pipe.—Gordon & Belyea, Ltd., has taken 100 tons for Vancouver, B. C., and will furnish French pipe. The 3844 tons required for Los Angeles is expected to be awarded next week. Prices are unchanged at \$50, base, water shipment, San Francisco.

Steel Pipe.—Los Angeles has awarded 274 tons as follows: 219 tons of 6-in. Matheson joint pipe to the N. O. Nelson Mfg. Co. and 55 tons of 2-in. standard black line pipe to the Crane Co. Fisher & McCall have been awarded the contract for 116 tons of 2-in. to 8-in. standard black line pipe by Mesa, Ariz.

Coke.—The Southern Pacific Co. has closed bids on 500 tons of coke. Little else of consequence has developed, although a number of small tonnages are being placed daily. Prices are unchanged. Importers' quotations are as follows:

English beehive, \$15 to \$16 at incoming dock, and English by-product, \$12 to \$14; German by-product, \$11.50 to \$12.

St. Louis

Scarcity of Pig Iron—Scrap Weaker— 4000 Tons of Concrete Bars Placed

ST. LOUIS, Oct. 6.—The combination of a more active demand for pig iron and a scarcity resulting from the heavy commitments of makers has added to the strength of the market. The local producer is virtually sold up for the rest of the year, and two of the leading Southern furnaces are taking no orders. The melt in the district is on the increase, and furnaces are being pressed for shipments in advance of schedules. Orders for spot shipment are hard to place, and even furnaces are endeavoring to buy iron to satisfy good customers. Sales of Northern iron for the week amounted to only

about 750 tons, in carloads up to 100 tons, while about 450 tons of Southern iron was placed in small lots. The principal inquiry issued by a broker is for 1200 tons of 2.75 per cent silicon foundry for delivery over the remainder of the year. A Peoria, Ill., stove maker wants 300 tons for last quarter and a local specialty manufacturer is in the market for 250 tons for October-November delivery.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$23.56
Northern malleable, sil. 1.75 to 2.25	23.56
Basic	23.56
Southern fdy., sil. 1.75 to 2.25...	\$24.17 to 24.67
Granite City iron, sil. 1.75 to 2.25.	23.31 to 23.81

Finished Iron and Steel.—The Kansas City Bolt & Nut Co. has sold 4000 tons of reinforcing bars for a sea wall at Gulfport, Miss., and the material will be moved by water. The Laclede Steel Co. has booked 100 tons of reinforcing bars for the Queen's Daughters' Building, St. Louis. No new inquiries have come from the railroads for several weeks, and the prospective rail purchases of the Kansas City Southern, Texas & Pacific and St. Louis Southwestern railroads are being held up for various reasons. Business generally is quiet, especially in view of the beginning of another quarter.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.50c.; galvanized sheets, No. 28, 5.50c.; black corrugated sheets, 4.65c.; galvanized, 5.65c.; cold-rolled rounds, shafting and screw stock, 3.75c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, $\frac{3}{8}$ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, \$3.50; hexagons, blank or tapped, \$4 off list.

Coke.—Demand for industrial coke is increasing. Stocks in hands of consumers have been light, and they are eager now to lay in reserve supplies. Domestic grades are in better demand. Prices are holding firm.

Old Material.—As pig iron gets stronger old material grows weaker, an incongruity commented on last week which has not yet been explained. About the only buying is of melting steel by dealers to fill old contracts. Consumers in the district simply will not show interest in material. Some improvement is noted in demand for relaying rails of the heavier weights. Railroad lists follow: Pennsylvania system, 36,112 tons; Chicago & Alton, 1790 tons; Mobile & Ohio, 22 carloads; Chicago & Eastern Illinois, 26 carloads; Missouri Pacific, 97 carloads and St. Louis Southwestern, 22 carloads.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	\$15.00 to \$15.50
Rails for rolling	19.50 to 20.00
Steel rails less than 3 ft.	18.50 to 19.00
Relaying rails, 60 lb. and under..	23.50 to 24.00
Relaying rails, 70 lb. and over..	30.00 to 31.00
Cast iron car wheels	17.50 to 18.00
Heavy melting steel	15.50 to 16.00
Heavy shoveling steel	15.25 to 15.75
Frogs, switches and guards cut apart	17.50 to 18.00
Railroad springs	18.50 to 19.00
Heavy axles and tire turnings...	13.00 to 13.50
No. 1 locomotive tires	16.50 to 17.00
Per-Net Ton	
Steel angle bars	16.00 to 16.50
Steel car axles	17.50 to 18.00
Iron car axles	24.50 to 25.00
Wrought iron bars and transoms	19.00 to 19.50
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	13.50 to 14.00
Cast iron borings	11.00 to 11.50
No. 1 busheling	12.00 to 12.50
No. 1 railroad cast	16.00 to 16.50
No. 1 machinery cast	17.50 to 18.00
Railroad malleable	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Bundled sheets	9.00 to 9.50

Birmingham

Pig Iron Gains in Strength—Record for Steel Output Broken

BIRMINGHAM, Oct. 6.—With unfilled tonnage increasing the position of Southern blast furnaces is steadily growing stronger. Sales of small lots of No. 2 foundry for immediate delivery have brought \$20 per ton, Birmingham. The minimum price at which tonnage has been placed in this district recently is \$19, and several large inquiries failed to develop a lower quotation than \$19.50, base Birmingham. Melters in the South, who are now credited with consuming close to 90 per cent of the iron produced in this territory, are still very active and report a large volume of business on hand with more in sight. Makers of soil pipe and fittings, however, are still conspicuous because of their rather slack operations. The probable make of Southern furnaces during the fourth quarter is fairly well covered. One furnace each at the Ensley and Republic plants is out for repairs, but surplus stocks will prove sufficient to care for demand until those stacks resume. In addition, two other furnaces may be blown in before the end of the year. The Tennessee company has one of its active furnaces on foundry and the Sloss-Sheffield Steel & Iron Co., although operating five furnaces on merchant iron, is making heavy inroads on its stocks.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	\$19.00 to \$20.00
No. 1 foundry, 2.25 to 2.75 sil.	20.00 to 20.50
Basic	19.00
Charcoal, warm blast	30.00 to 32.00

Rolled Steel.—Many of the finishing mills in this district are well booked ahead and are falling behind in deliveries. The open-hearth furnaces of the Tennessee Coal, Iron & Railroad Co. broke the production record for September, exceeding the previous high output by 8000 tons. The company's four new open-hearth furnaces are coming up to all expectations for production. Fabricating plants here are well supplied with business but are still hampered by transportation difficulties in southeastern Florida. Soft steel bars remain at 2.05c. to 2.15c., Birmingham.

Cast Iron Pipe.—Lettings during the past week, while not individually large, added considerably to the unfilled order books and plants are going at capacity. Shipments are going forward steadily. The Warrior River barge service has been suspended for two weeks for repairs on locks and all pipe movements are by rail. While severer weather is in sight, no curtailment of production is imminent. The soil pipe and fittings trade lags, but so many plants are making those products that their aggregate melt of iron is still large.

Coke.—Southern independent producers of coke are finding a fairly good market for their products with quotations firm at \$4.75 to \$5 per net ton, Birmingham. Furnaces are helping each other out whenever a shortage of coke develops. The Semet-Solvay by-product plant at Ensley, which heretofore has produced coke for furnaces of the district, will enter the commercial coke market. The relighting of beehive ovens, which were closed down, a few weeks ago because of low water in creeks, is under consideration.

Old Material.—Steady movement of old material is still noted in the Birmingham district. Prices show no change for the week. Heavy melting is holding at \$13. Dealers continue to abstain from taking long-time contracts for the reason that higher prices are looked for shortly.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	\$15.00 to \$16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	18.00 to 20.00
Iron axles	17.00 to 19.00
Steel rails	13.00 to 14.00
No. 1 cast	16.00 to 17.00
Tramcar wheels	16.00 to 17.00
Car wheels	15.00 to 16.00
Stove plate	13.00 to 14.00
Machine shop turnings	7.00 to 8.00
Cast iron borings	7.00 to 8.00
Rails for rolling	16.50 to 17.00

Buffalo

Pig Iron Advances—Active Demand for Concrete Bars

BUFFALO, Oct. 6.—The effect of recent buying has been to take one furnace interest practically out of the market for the balance of the year, the same producer quoting \$19.50 on first quarter delivery. Another seller, which has iron for the last quarter, is quoting \$19, base, and for first quarter delivery is asking \$20, base, with differentials of 50c. The situation indicates a minimum price of \$19, base, on the part of both merchant producers and steel works furnaces. Inquiry for the current week amounts to 20,000 to 25,000 tons, principally foundry and malleable grades. The Ingersoll-Rand Co. inquiry for 3200 tons of foundry and malleable is believed to have been placed. Other sizable inquiries include one for 1500 tons, another for 1100 tons and another for 1000 tons. Waldo, Egbert & McClain, sellers of the American Radiator Co. furnace's surplus iron, state that the product of that stack has been practically sold through the remainder of the year. Furnace men say that it is difficult to quote for first quarter, both because of the chaotic condition of the coal industry and the fact that no merchant furnace, lacking its own coke ovens, has been able to get quotations on first quarter coke.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25.....	\$19.00
No. 2X foundry, sil. 2.25 to 2.75..	\$19.00 to 19.50
No. 1 foundry, sil. 2.75 to 3.25....	19.50 to 20.00
Malleable, sil. up to 2.25.....	19.00
Basic	18.50
Lake Superior charcoal	29.28

Finished Iron and Steel.—Greater strength in the bar market is noted with carbon steel bars firm at 2.265c. and no shading observed. Shapes are quoted at 2.165c. Little plate business is moving and 2.065c. is the going price, with one of the smaller Eastern mills shading this price on attractive tonnages. The reinforcing bar market is exceptionally active with inquiries pouring in. Recent placements include 220 tons for a Standard Oil Co. garage and 200 tons for an extension of the Buffalo General Electric Co. plant. An inquiry is out for 200 tons for the Louisville Cement Co. mill to be built near Akron, N. Y. A local fabricator took the contract for 150 tons of structural steel for a Rochester, N. Y., apartment house.

Warehouse prices are being quoted as follows: Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 3.80c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.45c.; cold rolled shapes, 4.40c.; cold rolled rounds, 3.95c.; wire nails, 4c.; black wire, 4.05c.

Old Material.—The market is dragging along with very little mill purchasing. One local mill has offered 17 to \$17.50 for heavy melting steel, but is apparently not eager to buy a tonnage. Some buying is in sight and weight is lent to this view by the fact that mill stocks are not heavy. The trade believes a buying movement would raise prices \$1 to \$1.50. The market outside is quieter. Railroad lists went to another district and brought the equivalent of approximately \$19, delivered Buffalo, on heavy melting and \$19.50, delivered Buffalo, on rerolling rails. An occasional small tonnage of specialties is moving and with business in steel castings plants looking up, the market on low phosphorus grades is expected to strengthen.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel.....	\$17.50 to \$18.00
Low phosphorus	20.00 to 20.50
No. 1 railroad wrought	16.50 to 17.00
Car wheels	16.50 to 17.50
Machine shop turnings	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	16.50 to 17.00
Stove plate	15.00
Grate bars	14.50 to 15.00
Hand bundled sheets.....	13.00 to 13.50
Hydraulic compressed	16.50 to 17.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	19.50 to 20.00
No. 1 cast scrap	17.00 to 17.50
Iron axles	26.00 to 27.00
Steel axles	20.00 to 20.50

Boston

Soft Spots in Pig Iron Market Hold Back Advances

BOSTON, Oct. 6.—Soft spots in pig iron prices keep cropping up, checking a concerted upward movement of the market. Weakness is confined largely to Buffalo district and imported iron. Although Buffalo district iron is openly quoted on a higher basis, recent sales of No. 2X for first quarter delivery were made at \$18.75, furnace, or \$23.66 delivered. In addition, Continental iron sellers, who claim to be on a basis of \$22, Boston dock duty paid, last week solicited business on a basis of \$21. Moreover, New York furnaces having a much lower freight rate into New England than Buffalo stacks, recently have taken No. 2X first quarter business at \$18.50, furnace, or around \$21 delivered. Buyers claim these prices can be duplicated today. A western Pennsylvania furnace has advanced first quarter prices 50c. a ton to \$19, base furnace, or \$24.91 delivered, with full differentials, and has booked business on that basis. For last quarter shipment the price is 50c. higher at \$19, base furnace, but No. 2X will be accepted at \$19 also. Some Buffalo iron has sold within the past few days at \$19, base furnace, for last quarter shipment and at \$19.50 for first quarter, but there is no real stability to the market. Alabama iron continues to sell in moderate tonnages for mixture purposes at full asking prices. Eastern Pennsylvania and Virginia furnaces remain in the background so far as New England is concerned. Jobbing foundries in Connecticut appear busier than heretofore, in some cases working night shifts. In other New England States, however, small foundries collectively are less active.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$24.65
East. Penn., sil. 2.25 to 2.75.....	25.15
Buffalo, sil. 1.75 to 2.25.....	\$23.41 to 24.41
Buffalo, sil. 2.25 to 2.75.....	23.41 to 24.91
Virginia, sil. 1.75 to 2.25.....	28.92 to 29.42
Virginia, sil. 2.25 to 2.75.....	29.42 to 29.92
Alabama, sil. 1.75 to 2.25.....	28.60 to 29.10
Alabama, sil. 2.25 to 2.75.....	29.10 to 29.60

Pig Iron Importations.—India, which has led in pig exports to this port for months, in September dropped to second place. Germany led with 4064 tons, India exported 2475 tons and Holland 208 tons. The total for September was 6747 tons, contrasted with 8248 tons in August. September's importations brought the grand total for the year up to 73,455 tons.

Shapes and Plates.—A fair number of contracts for fabricated steel work were let here the past week, but most of them require only a small amount of steel. There are, however, several large jobs pending, which give indication of being placed before snow flies. The market for shapes is generally 2c. per lb., base Pittsburgh, but buyers maintain it is still possible to do 1.90c. on sizable tonnages. Demand for plates is running ahead of a year ago, but is not active. The general asking price is 1.75c., base Pittsburgh, but that price has been shaded.

Coke.—By-product coke remains at \$12 a ton delivered where the freight rate does not exceed \$3.10 a ton, no change in prices having been made this month by the New England Coke & Coal Co. and the Providence Gas Co. Both companies were unable to make shipments on all September contract specifications owing to the pressure for domestic coke. The market for Connellsville crushed coke and foundry coke is more active. Crushed is selling at \$11 to \$11.50 a ton delivered, and the best grades of foundry at \$11. New England receipts of crushed coke the past few weeks have averaged around 100 cars. An unconfirmed report has it that one of the New England coke makers contemplates the discontinuance of foundry coke production on or about Jan. 1.

Cast Iron Pipe.—Buying of pipe has quieted down. The only open inquiry in the market today is one for 100 tons of 6-in. pipe, wanted by Beverly, Mass., bids

for which close this week. Attleboro, Mass., closed bids Sept. 28 for 100 tons of 6-in., but has not made an award. Hartford, Conn., has placed 150 tons of pipe with the United States Cast Iron Pipe & Foundry Co. Most of the foundries are booked to the end of the year on small pipe, particularly 6-in. and 8-in., and are holding firmly to list prices. They are anxious for large pipe business, however, and are offering concessions of \$1 to \$1.50 a ton. Prices quoted openly for domestic pipe follow: 4-in., \$60.10 a ton, delivered common Boston freight rate points; 6-in. to 16-in., \$56.10; 20-in. and larger, \$55.10. The usual \$5 differential is asked on Class A and gas pipe. A sizable tonnage of gas pipe, late fall and winter delivery, for spring work, has been placed privately during the past fortnight.

Old Material.—More activity is noted in the movement of old material. Considerable heavy melting steel was bought the past week at \$11.50 to \$12.50 a ton on cars for shipment to the American Steel & Wire Co., Worcester, Mass., and to the Bethlehem Steel Co. A Phillipsdale, R. I., melter reentered the market for a round tonnage, which has been filled. The market for specification pipe remains \$12 to \$12.50. More pipe is moving than any other material. Good tonnages of skeleton also have been purchased for shipment to Worcester, and there is a good demand for mixed borings and turnings. A Portland, Me., rolling mill is still buying shafting, and a Norwood, Mass., plant stove plate. Business in other materials consists of an odd car now and then. Prices in general are irregular, with a slight advantage on the down side. The Boston & Albany Railroad yesterday closed bids on 300,000 lb. of heavy melting steel, and on 1,000,000 lb. of miscellaneous material.

The following prices are for gross ton lots delivered consuming points:

Textile cast	\$20.00 to \$21.00
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	15.50 to 16.50
Stove plates	13.50 to 14.50
Railroad malleable	19.00 to 20.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	\$11.50 to \$12.50
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	12.00 to 12.50
Machine shop turnings	9.00 to 9.50
Cast iron borings, chemical	11.50 to 12.00
Cast iron borings, rolling mill	9.00 to 9.50
Blast furnace borings and turnings	8.50 to 9.00
Forged scrap	9.50 to 10.50
Bundled skeleton, long	9.50 to 10.00
Forged flashings	10.00 to 10.50
Bundled cotton ties, long	9.50 to 10.00
Bundled cotton ties, short	10.00 to 10.50
Shaftings	18.00 to 18.50
Street car axles	18.00 to 18.50
Rails for rerolling	12.50 to 13.25
Scrap rails	11.50 to 12.50

Cincinnati

Pig Iron Dull but Tennessee Iron and Silvery Advance—Coke More Active

CINCINNATI, Oct. 6.—Lack of consumer interest has had a depressing effect upon the local pig iron market, and the volume of sales dropped off sharply during the past week. Despite this fact, however, prices gained in strength, notably on Southern and silvery grades. Producers in Ironton territory are making a formidable attempt to raise their quotations to a minimum of \$20, base Ironton, but they have not succeeded in eliminating \$19.50 as the quotation on large tonnages. Tennessee iron has again advanced 50c. to \$19, base Birmingham, and the lone active furnace in that State is refusing to quote on first quarter business, thereby adopting a policy similar to that of Alabama producers. While Alabama iron for the fourth quarter can be obtained at \$19, base Birmingham, sellers are inclined to ask \$19.50, a price which is too high to secure sizable orders in this market. Jackson County silvery furnaces have raised their schedule to \$27.50, furnace, for 8 per cent, while \$1

more is being asked for first quarter. The largest sale of the week was 1000 tons of Northern foundry to an Indiana melter for fourth quarter delivery. Three silvery orders for 500 tons each were booked by local dealers, and a northern Ohio consumer has taken 500 tons of Tennessee iron. The Lavelle Foundry Co., Anderson, Ind., is inquiring for 3000 tons of Northern foundry iron for first quarter. Another Indiana melter is asking for 400 to 600 tons of foundry for shipment through the first half of 1926. Although there is only one furnace in blast in the Ironton district, renewal of production on a wide scale is planned, and it is expected that three furnaces, now idle, will be blown in before the end of the year. A local dealer has sold 100 tons of ferrophosphorus and two cars of ferromanganese.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25	
(base)	\$23.05 to \$23.55
Alabama fdy., sil. 2.25 to 2.75	23.05 to 23.55
Tennessee fdy., sil. 1.75 to 2.25	23.05
Southern Ohio silvery, 8 per cent	28.27
Southern Ohio fdy., sil. 1.75 to 2.25	21.77 to 22.27
Southern Ohio, malleable	21.77 to 22.27

Wire Goods.—The price of common wire nails remains at \$2.74 per keg, delivered in Cincinnati. This quotation, which was set up by an independent mill in the Ironton district, is being met by several Eastern producers. Those mills which have refused to recognize this price, which is equivalent to \$2.45, Pittsburgh, have automatically eliminated themselves as factors in this market. Plain wire is selling at \$2.59 per 100 lb., delivered in Cincinnati, and here again Eastern mills are compelled to take business at that quotation in order to meet the competition from Ironton.

Sheets.—Orders booked the past week reached liberal proportions. Sellers declare that tonnage taken during September compared favorably with bookings for any previous month this year. Despite the fact that mills are accumulating small backlogs, efforts to place prices on a more profitable basis have been ineffective.

Bars, Plates and Shapes.—Sellers report that they have booked substantial tonnages in the aggregate. Bars have been restored to their former price of 2c., Pittsburgh, and consumers are finding that they are unable to shade this quotation, even when an attractive lot appears. Furthermore, mills are reluctant to make contracts extending throughout the fourth quarter and only do so when a preferred customer insists. One producer declares that it has less outstanding contracts than at any time for many months and it regards this situation as most satisfactory. A stiffening of shape prices has resulted in establishing 2c., Pittsburgh, as the prevailing figure, although 1.90c., Pittsburgh, can still be done on large tonnages. Quotations of 1.80c. to 1.90c., Pittsburgh, are being made on plates, but it is only in a few instances that sellers can obtain the latter price. Independent mills are keeping plates in an unsettled condition by offering low prices. The Big Four railroad, which took bids on 1400 tons, has not closed, but it is believed that this lot will go at 1.80c. or less.

Reinforcing Bars.—The Ferro Concrete Construction Co., Cincinnati, has been awarded a general contract for erection of an addition to the plant of the American Laundry Machinery Co., Norwood, Ohio, but will probably take the bar requirements from stock. Pending projects include 485 tons for a new warehouse for the Kroger Grocery & Baking Co., Columbus, Ohio, and 600 tons for a new factory for the Marietta Safe Cabinet Co., Marietta, Ohio, on which bids have gone in. Rail steel bars are displaying more strength and are firm at 1.90c., mill. New billet bars are steady at 2c., Cleveland.

Warehouse Business.—Sales during September attained liberal proportions, while activities during the first few days of October indicate that a healthy demand will continue throughout the month. Bars, plates

and shapes are the most active products. Prices remain firm.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.55c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c.; No. 28 galvanized sheets, 5.25c.; No. 9 annealed wire, \$3 per 100 lb.; common wire nails, \$2.95 per keg base; cement coated nails, \$2.40 per keg; chain, \$7.55 per 100 lb. base; large round head rivets, \$3.75 base; small rivets, 65 per cent off list. Boiler tubes; prices net per 100 ft. lap welded steel tubes, 2-in., \$18; 4-in., \$38; seamless, 2-in., \$19; 4-in., \$39.

Coke.—The coke market has been given impetus by increased demand for foundry and domestic grades. By-product foundry coke shipments for the first week of October were considerably ahead of those in any week in September, but the price remains at \$9.64, delivered Cincinnati. Dealers declare that the movement of foundry coke shows a substantial increase compared with the corresponding period a year ago. One producer in the New River district has advanced his price \$1, making the minimum quotation on coke from that region \$9.90, delivered here. An Indiana consumer has closed for 1350 tons of furnace coke, while another buyer in this territory has taken 500 tons of Wise County furnace coke.

Old Material.—Consumers are manifesting little desire to purchase scrap and, judging by the plentiful stocks accumulated by mills, it is unlikely that buying on an extensive scale will be resumed in the immediate future. Prices have weakened, and heavy melting steel can now be obtained at \$14 to \$14.50.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$14.00 to \$14.50
Scrap rails for melting.....	14.00 to 14.50
Short rails.....	18.00 to 18.50
Relaying rails.....	28.00 to 28.50
Rails for rolling.....	15.00 to 15.50
Old car wheels.....	13.50 to 14.00
No. 1 locomotive tires.....	16.50 to 17.00
Railroad malleable.....	15.50 to 16.00
Agricultural malleable.....	15.00 to 15.50
Loose sheet clippings.....	10.00 to 10.50
Champion bundled sheets.....	11.50 to 12.00
Per Net Ton	
Cast iron borings.....	8.50 to 9.00
Machine shop turnings.....	7.50 to 8.00
No. 1 machinery cast.....	18.50 to 19.00
No. 1 railroad cast.....	15.00 to 15.50
Iron axles.....	22.50 to 23.00
No. 1 railroad wrought.....	11.50 to 12.00
Pipes and flues.....	8.50 to 9.50
No. 1 busheling.....	10.50 to 11.00
Mixed busheling.....	9.00 to 9.50
Burnt cast.....	9.50 to 10.00
Stove plate.....	10.50 to 11.00
Brake shoes.....	10.50 to 11.00

Philadelphia

Pig Iron Firmer with Some Advances—Steel Buying Continues Gain

PHILADELPHIA, Oct. 6.—A steadily improving market position for both finished steel and foundry pig iron has developed. Current buying of steel is at a much better rate than pig iron buying, but the Eastern furnaces are well filled up for the remainder of the year and are not overly anxious to sell for first quarter. Steel orders so far this month show a better daily average than September orders, and there is every indication that October will register as substantial a gain over last month as September did over August. The scrap market continues quiet and weak, with some prices showing slight losses.

Production schedules are being speeded up. The Bethlehem Steel Co. has put on another furnace at Sparrows Point, which makes a full operation there, and has also blown in a stack this week at Steelton.

Pig Iron.—Nearly every furnace in the eastern Pennsylvania district now has a full order book to the end of the year and one or two are over-sold. In the past week foundry iron prices, now based on \$21, furnace, for No. 2 plain, have become firmer. One furnace has advanced to a minimum of \$21.50 for No. 2 plain, while another company has quoted this base on

some inquiries where it has a freight rate advantage. Now that melters are showing more interest in first quarter contracts there is a disposition on the part of furnace operators to advance prices still further, as there is hesitancy about selling for next year at the prevailing quotations, so little being known now as to what the coke situation may be at that time. The National Radiator Co. has inquired for 3000 tons for delivery in this quarter and 4500 tons for first quarter for its three plants, this being the largest first quarter inquiry now in the market. Sales during the week have been small. Foreign iron continues a very important competitive factor in all transactions. A New Jersey cast iron pipe company has contracted for 20,000 tons of English iron, which will be shipped partly this year and the remainder in first quarter.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$21.76 to \$22.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.26 to 22.63
East. Pa. No. 1X.....	22.76 to 23.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivery eastern Pa.....	21.00 to 21.50
Gray forge.....	21.00 to 22.00
Malleable.....	22.25 to 22.75
Standard low phos. (f.o.b. furnace).....	22.00 to 24.00
Copper bearing low phos. (f.o.b. furnace).....	22.50 to 23.50

Ferroalloys.—There is no suggestion of any change in the price of ferromanganese, quoted by importers and the domestic producer at \$115, seaboard or furnace. Business is confined to carload lots.

Billets.—There are reports of occasional shading of prices on billets, but there is not enough business to give prices a real test. Nominally rerolling billets are \$35, Pittsburgh, and forging billets \$40.

Plates.—Demand for plates is showing a slow but steady gain, this month being better in tonnage placed than last month. The Lukens Steel Co. will put on another open-hearth furnace next week, making 10 active. Prices continue weak. Anything desirable can be placed at 1.70c., Pittsburgh, and even this price appears none too strong.

Structural Material.—A good volume of orders for plain material is coming to the mills, but the price situation continues a source of dissatisfaction to sellers. Although 1.90c., Pittsburgh, obtains on the bulk of the tonnage, there are scattered orders at prices equivalent to 1.75c. and 1.80c., Pittsburgh. Local and nearby fabricating shops have substantial tonnages on their books for early fabrication.

Bars.—The steel bar price now seems to be quite firm at 2c., Pittsburgh. All of the leading makers name that price and say they are not deviating from it. Orders are coming to the mills in good volume, being perhaps a little better than shipments. Bar iron remains at 2.12c. to 2.22c., Philadelphia.

Sheets.—Demand for sheets continues active, but prices are no stronger. The range on blue annealed is 2.20c. to 2.30c., Pittsburgh, with the bulk of business at 2.25c. and 2.30c.; galvanized sheets are easily obtainable at 4.20c., with this price being shaded in some instances, and black sheets are 3.10c. to 3.15c., Pittsburgh, with less being heard of quotations under 3.10c.

Warehouse Business.—Local jobbers have reduced prices on cold finished steel out of stock in keeping with reduction of mill prices. We quote various products for local delivery as follows:

Soft steel bars and small shapes, 3.20c.; iron bars (except bands), 3.20c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 2.80c. to 3c.; tank steel plates, ¾ in., 3c.; blue annealed steel sheets, No. 10 gage, 3.35c.; black sheets, No. 28 gage, 4.35c.; galvanized sheets, No. 28 gage, 5.45c.; square, twisted and deformed steel bars, 3c.; structural shapes, 2.75c. to 2.90c.; diamond pattern plates, ¼ in., 5.30c.; ½ in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 3.90c.; squares and flats, cold-rolled steel, 4.40c.; steel hoops, 4.25c. base; steel bands, No. 12 gage to ¾ in., inclusive, 3.90c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Imports.—Last week's imports included 1000 tons of pig iron from England and 1633 tons from India; 6948 tons of iron ore from Sweden; 85 tons of ferromanganese from England, 54 tons of structural steel from Germany and 235 tons of structural steel from Luxemburg.

Old Material.—The scrap market is weak, and there have been slight price recessions on some grades. Not more than \$17, delivered, is obtainable for heavy melting steel, while one company has bought scattered lots up to 3000 tons at \$16.50.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$16.50 to \$17.00
Scrap rails	16.50 to 17.00
Steel rails for rolling.....	18.00 to 18.50
No. 1 low phos. heavy 0.04 and under	21.50 to 22.00
Couplers and knuckles	21.00 to 21.50
Rolled steel wheels	21.00 to 21.50
Cast iron car wheels	18.50 to 19.00
No. 1 railroad wrought	18.00 to 18.50
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	14.00
Mixed borings and turnings (for blast furnace use).....	13.50 to 14.00
Machine shop turnings (for steel works use)	14.00
Machine shop turnings (for rolling mill use)	14.50 to 15.00
Heavy axle turnings (or equivalent)	15.00 to 15.50
Cast borings (for steel works and rolling mill)	14.00
Cast borings (for chemical plant)	16.00 to 16.50
No. 1 cast	18.00
Heavy breakable cast (for steel plants)	17.00
Railroad grate bars.....	14.50
Stove plate (for steel plant use)	14.50
Wrought iron and soft steel pipes and tubes (new specifications)	16.50
Shafting	23.00 to 24.00
Steel axles	24.00 to 25.00

Cleveland

Automobile Demand for Steel Heavy—Ore Shipments Decline

CLEVELAND, Oct. 6.—Orders for steel, particularly for steel bars, showed a gain during the week and all producers report a good volume of business. Some mills have been able to accumulate a fair backlog and feel that what they already have on their books with what they expect to come in later will assure them good operations through the entire quarter. Business is well distributed among various consuming industries. The automotive industry continues to take a large amount of material and considerable new business has come from that source the past few days for delivery through or well into the fourth quarter. The demand from automobile builders for alloy steel, which fell off somewhat a few weeks ago when new models were being brought out, has increased and a leading maker of alloy steel has specifications to keep its plant in full operation nearly through November. Demand for wire products, which has been dragging, has increased and is now better than for several months. Jobbers are ordering rather freely. Steel bars are firmly established at 2c., Pittsburgh, in this territory, although some buyers are still attempting to secure concessions on round lots and are holding back orders because they are not convinced the price will hold. Plates are unchanged at 1.80c., Pittsburgh. Mills are not attempting to get a high price for large lots, but small lot sales are being made at 1.85c. to 1.90c. Structural material is firmer. A leading producer has advanced its price to 2c., Pittsburgh, but 1.90c. has not disappeared. The lull in building activity in this territory continues and fabricators are figuring on very little work.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 3.80c.; No. 28 galvanized sheets, 4.95c.; No. 10 blue annealed sheets, 3c.; cold-rolled rounds and hexagons, 3.80c.; flats and squares, 4.30c.; hoops and bands, 3.85c.; No. 9 annealed wire, \$3 per 100 lb.; No. 9 galvanized wire, \$3.45 per 100 lb.; common wire nails, \$3 base per 100 lb.

Pig Iron.—Inquiry for foundry and malleable iron for the first quarter has increased, but not much business has been placed for that delivery as some producers will not yet take first quarter contracts and

others are not anxious to sell that far ahead. There is still a fair volume of fourth quarter business and sales by Cleveland interests during the week aggregated close to 25,000 tons. The Michigan market is quite active. Specifications for larger tonnages than for last month have been sent out by some of the leading automobile companies that are increasing their production schedules. Locally the market is rather quiet. One furnace interest has advanced its price 50c. a ton, establishing the market at \$20, furnace, for local delivery. For outside shipment local producers quote \$19 at furnace. Prices quoted by other Lake furnaces and in the Valley district are unchanged, but the market is very firm and there is some talk of a 50c. advance from the prevailing price of \$19, Valley. In western Ohio \$20, furnace, is the ruling quotation and in Michigan there is a range on foundry and malleable grades of from \$20 to \$21. One southern Ohio producer marked up 8 per cent silvery iron Oct. 1, 50c. a ton to \$27.50, bringing its price in line with that quoted by other makers, and announced an additional advance of \$1 a ton for the first quarter.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 from Birmingham:

Basic, Valley furnace	\$18.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.50
Southern fdy., sil. 1.75 to 2.25	24.51 to 25.51
Malleable	20.00
Ohio silvery, 8 per cent	30.52
Standard low phos., Valley furnace	27.50 to 28.00

Iron Ore.—There is still some activity in the ore market. A steel plant purchased 55,000 tons and there were also several small lot sales during the week. A St. Louis consumer is understood to have placed 120,000 tons for next year. Shipments of Lake Superior ore by water during September amounted to 7,354,873 gross tons, as compared with 6,164,931 tons in September last year. The figures of shipments confirmed the announcement previously made of the slowing down of the ore movement in September. The August movement was 8,532,718 tons, or more than 1,000,000 tons greater than September. Shipments up to Oct. 1, were 42,812,026 tons, a gain of 7,850,154 tons, or 22.45 per cent over the same period last year.

Semi-Finished Steel.—A northern Ohio mill placed an order during the week for its sheet bar requirements during October, amounting to about 3500 tons at \$33.50, Youngstown. This appears to be the more common price, although some mills are still holding to \$35. Large billets and slabs are quoted at \$33.50, Youngstown. A Cleveland mill continues to name \$35, Cleveland or Youngstown, as its price on sheet bars, billets and slabs.

Sheets.—The volume of business is fairly heavy and some of the mills have accumulated a backlog, having orders to keep them running full for six weeks. However, others have orders for only two weeks' operations. Considerable new business is coming from Detroit automobile companies. Detroit consumers have been able to place blue annealed sheets at 2.20c., but in this territory 2.25c., Pittsburgh or Youngstown, appears to be the minimum price and 2.30c. has become more common. On black sheets 3.10c. is still being quoted, although most of the mills are holding to 3.15c. Galvanized sheets are still on the 4.20c. basis. Automobile body sheets are firm.

Strip Steel.—The weakness recently reported in cold rolled strip seems to have disappeared and leading makers are holding firmly to 3.75c., Cleveland. Mills are well filled as a result of recent orders from the automotive industry. Hot rolled strip is firm at regular quotations.

Screw Stock.—A leading producer has reduced its price \$2 to 2.45c., Cleveland. For some time the market has been weak, and the new quotation more closely represents the price at which most of the business has been taken recently.

Coke.—A heavy demand for domestic by-product coke, particularly from the East, has been caused by

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NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

Sept.	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
	Lake	Electrolytic*		New York	St. Louis	New York	St. Louis
30.....	14.62½	14.12½	59.87½	9.60	9.25	8.22½	7.87½
Oct.							
1.....	14.62½	14.12½	60.50	9.60	9.25	8.27½	7.92½
2.....	14.62½	14.17½	60.25	9.60	9.25	8.30	7.95
3.....	14.62½	14.12½	...	9.60	9.25	8.32½	7.97½
5.....	14.50	14.12½	60.00	9.60	9.25	8.35	8.00
6.....	14.50	14.12½	60.62½	9.60	9.25	8.40	8.05

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Oct. 6.

Quietness, accompanied by steadiness, pervades most of the markets. Copper is about holding its own with buying light. Tin is strong and moderately active. Little change has taken place in the lead market. Zinc, the strongest market, continues to advance.

Copper.—After the close of September and with the elimination of speculative operations and stocks, the market started to improve and prices advanced slightly. On Oct. 2 electrolytic copper was selling at 14.40c. to 14.45c., delivered, with some sales at 14.50c. The advance did not last long. With lower prices in London yesterday and today, consumers here have been slow to buy and the market is again where it was a week ago, or at 14.37½c., delivered. There is a better tone today accompanied by more inquiry. Export business is reported light. Lake copper is quoted at 14.50c. to 14.62½c., delivered.

Copper Averages.—The average price of Lake copper for the month of September, based on daily quotations in THE IRON AGE, was 14.81½c., delivered. The average price of electrolytic copper was 14.42c., refinery, or 14.67c., delivered.

Tin.—The market has been moderately active and prices have been advancing. Fair sales are reported during the past week, the bulk having been made on Tuesday, Wednesday and Thursday when about 1000 tons changed hands. Friday and yesterday the sales were small, amounting to about 100 and 150 tons, respectively. The larger portion of these sales were for delivery in October and November, with consumers buying about half of the total, dealers taking the remainder. The position of tin is exceedingly strong. This is evident from an analysis of current statistics which show that for the first nine months of this year about 9000 more tons of tin was consumed in the United States than for the same nine months last year. On the other hand, the output of the Straits Settlements to Oct. 1, this year, was about 2400 tons less than for the same period last year. The visible supply also on Oct. 1 had decreased about 2300 tons from that of Sept. 1. Today the market continues strong with very good buying and with spot Straits tin quoted at 60.62½c., New York. Quotations in London today were about £5 per ton higher than a week ago, with spot standard quoted at £269 15s., future standard at £270 10s. and spot Straits at £277 5s. The Singapore price was £276. Arrivals thus far this month have been 2145 tons, with 4619 tons reported afloat.

Lead.—The market continues very firm and steady with a fair business reported each day and little change in prices. The leading producer in the West is taking business at 9.25c., St. Louis, and the American Smelting & Refining Co. continues to quote 9.50c., New York, as its contract price. We quote the outside market at 9.25c., St. Louis, or 9.60c., New York.

Zinc.—Prime Western zinc has advanced nearly ¼c. per lb. within the week, due largely to a decided increase in sales for export. There has also been some fairly good buying by domestic consumers. These facts together with the strong statistical position have tended toward a sellers' market. Quotations today are 8.05c., St. Louis, or 8.40c., New York.

Nickel.—Wholesale lots of ingot nickel are quoted at 34c., with shot nickel at 35c. Electrolytic nickel is quoted at 38c.

Antimony.—Chinese metal in wholesale lots for spot and September delivery is quoted at 17.25c., New York, duty paid. Metal for September-October shipment from China is very strong, with quotations at 17c. to 17.25c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is unchanged at 27c. to 28c. per lb.

Old Metals.—Demand is better and values stronger. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible.....	14.25
Copper, heavy and wire.....	13.25
Copper, light and bottoms.....	11.50
Heavy machine composition.....	10.25
Brass, heavy.....	8.75
Brass, light.....	7.75
No. 1 red brass or composition turnings..	9.75
No. 1 yellow rod brass turnings.....	9.50
Lead, heavy.....	8.50
Lead, tea.....	7.00
Zinc.....	5.25
Cast aluminum.....	20.50
Sheet aluminum.....	20.50

Chicago

Oct. 6.—Copper has declined slightly due to competition from foreign markets and tin has advanced because of an increased demand. Lead has firmed up in an active market and with stocks low. Zinc has increased as the result of a firm demand for shipment from stock. The market for antimony is quiet. Among the old metals the only change in price is that of zinc which has advanced. We quote in carload lots: Lake copper, 14.65c.; tin, 61.50c.; lead, 9.40c.; zinc, 8.05c.; in less than carload lots, antimony, 18.50c. On old metals we quote copper wire, crucible shapes and copper clips, 11.50c.; copper bottoms, 10c.; red brass, 9c.; yellow brass, 7.75c.; lead pipe, 8c.; zinc, 4.65c.; pewter, No. 1, 32.50c.; tin foil, 41c.; block tin, 46c.; all being dealers' buying prices for less than carload lots.

Cleveland Iron and Steel Market

(Concluded from page 996)

the anthracite strike. Domestic coke advanced \$1 a ton during the week to \$6.50 for both egg and nut size, and an Ohio maker is now asking \$7 a ton for late October shipments. This is equivalent to \$6.50, Connellsville, for Eastern shipment. Foundry coke is unchanged at \$4.75 to \$5 for standard Connellsville makes and \$7.50 for Ohio by-product coke.

Bolts, Nuts and Rivets.—Bolt and nut makers report an increase in the volume of orders during the week, this being due to the fact that the jobbing trade is specifying more freely. Prices are firm at regular quotations. Rivets, which have been very quiet, are moving somewhat better. A local maker continues to hold to \$2.50 for carlots, although the market is still irregular with \$2.40 being quoted. Small rivets are weak.

Old Material.—There is very little new demand from the mills, buying being limited to small lots. Dealers seem to be well covered on old orders and trading between dealers is not active. Prices on all grades remained stationary the past week. The market has a little firmer tone than for several weeks and some feel that the downward movement in prices has been stopped.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel.....	\$16.50 to \$16.75
Rails for rolling.....	16.75 to 17.00
Rails under 3 ft.....	18.75 to 19.00
Low phosphorus melting.....	17.25 to 18.00
Cast iron borings.....	13.25 to 13.50
Machine shop turnings.....	12.00 to 12.50
Mixed borings and short turnings.....	13.25 to 13.50
Compressed sheet steel.....	14.00 to 14.50
Railroad wrought.....	13.50 to 14.00
Railroad malleable.....	19.00 to 19.50
Light bundled sheet stampings..	11.25 to 11.50
Steel axle turnings.....	14.75 to 15.25
No. 1 cast.....	18.00 to 18.50
No. 1 busheling.....	13.00 to 13.25
Drop forge flashings.....	12.50 to 13.00
Railroad grate bars.....	13.50 to 13.75
Stove plate.....	13.50 to 13.75
Pipes and flues.....	10.50 to 11.00

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....1.80c. to 1.90c.
F.o.b. Chicago, base, per lb.....2.10c.

Structural Shapes

F.o.b. Pittsburgh mill, base, per lb.....1.90c. to 2c.
F.o.b. Chicago, base, per lb.....2.10c.

Iron and Steel Bars

Soft steel bars, f.o.b. P'gh mills, base, per lb.....2c.
Soft steel bars, f.o.b. Chicago, base, per lb.....2.10c.
Reinforcing steel bars, f.o.b. P'gh mills, per lb.....2c.
Rail steel bars, f.o.b. Chicago and f.o.b. Chicago district mills, base, per lb.....2.00c.
Common iron bars, f.o.b. Chicago, base, per lb.....1.90c. to 2.00c.
Refined iron bars, f.o.b. P'gh mills, base, per lb.....2.00c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

Hoops, base (6 in. and narrower), per lb., Pittsburgh..2.40c.
Bands, base (6 in. and narrower), per lb., Pittsburgh..2.40c.
Strips, 6 in. and narrower, base, per lb., Pittsburgh..2.40c.
Strips, wider than 6 in., base, per lb., Pittsburgh..2.20c.
Strips, 6 in. and narrower, Chicago.....2.40c. to 2.50c.
Strips, wider than 6 in., Chicago.....2.30c. to 2.40c.
Cotton ties, per 45 lb. bundle, f.o.b. Atlantic ports.....\$1.28
Cotton ties, per 45 lb. bundle, f.o.b. Gulf ports.....1.25

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb..2.40c.
Screw stock and shafting, f.o.b. Chicago, base, per lb..2.40c.
Screw stock, base, per lb., Cleveland.....2.45c. to 2.55c.
Shafting, ground, f.o.b. mill, base, per lb.....*2.80c. to 3.00c.
Strips, f.o.b. P'gh mills, base, per lb.....3.75c.
Strips, f.o.b. Cleveland mills, base, per lb.....3.75c.
Strips, delivered Chicago, base, per lb.....4.05c.
Strips, f.o.b. Worcester mills, base, per lb.....3.90c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)
Nails, base, per keg.....\$2.60 to \$2.65
Galvanized nails, 1-in. and longer, base plus.....2.00
Galvanized nails, shorter than 1 in., base plus.....2.25
Bright plain wire, base, No. 9 gage, per 100 lb.....2.50
Annealed fence wire, base, per 100 lb.....2.65
Spring wire, base, per 100 lb.....3.50
Galvanized wire, No. 9, base, per 100 lb.....3.10
Galvanized barbed, base, per 100 lb.....3.35
Galvanized staples, base, per keg.....3.35
Painted barbed wire, base, per 100 lb.....3.10
Polished staples, base, per keg.....3.10
Cement coated nails, base, per count keg.....1.85
*Bale ties, carloads, to jobbers...75, 15 and 5 per cent off list
*Bale ties, carloads, to retailers...75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.....\$65
Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant, and Duluth, Minn., mills \$2 a ton higher; Anderson, Ind., \$1 higher.

*F.o.b. Cleveland.

Sheets

Blue Annealed (base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....2.25c. to 2.30c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills, 2.40c. to 2.45c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.10c. to 3.15c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.30c. to 3.35c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh.....4.20c. to 4.30c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..4.35c. to 4.40c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.10c. to 3.15c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.30c. to 3.35c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. Pittsburgh.....4.25c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill..4.60c. to 4.75c.

Tin Plate

Standard cokes, per base box, f.o.b. Pittsburgh district mills\$5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind.....5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base .....\$11.20	20-lb. coating I. C....\$15.50
8-lb. coating I. C....11.50	25-lb. coating, I. C....17.00
15-lb. coating I. C....14.35	30-lb. coating I. C....18.35
	40-lb. coating, I. C....20.35

Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb. \$2.40 to \$2.50
Large, f.o.b. Chicago, base, per 100 lb.....2.60 to 2.65
Small, f.o.b. Pittsburgh.....70, 10 and 5 per cent off list
Small, Cleveland70, 10 and 10 per cent off list
Small, Chicago70, 10 and 10 per cent off list

Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....\$43.00
Rails, light, billet, base, per lb.....1.65c. to 1.70c.
Rails, light rail steel, base, per lb.....1.50c. to 1.60c.
Spikes, 1 in. and larger, base, per 100 lb.....\$2.80 to \$3.00
Spikes, 1 in. and smaller, base, per 100 lb.....3.00 to 3.25
Spikes, boat and barge, base, per 100 lb.....3.25
Track bolts, all sizes, base, per 100 lb.....3.90 to 4.25
Tie plates, per 100 lb.....2.35 to 2.40
Angle bars, base, per 100 lb.....2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Inches	Steel Black	Galv.	Inches	Iron Black	Galv.
1/4	45	19 1/4	1/4 to 3/8	+11	+39
1/2	51	25 1/4	1/2	22	2
3/4	56	42 1/4	3/4	28	11
1	60	48 1/4	1 to 1 1/2	30	13
1 to 3	62	50 1/4			

Lap Weld

2	55	43 1/4	2	23	7
2 1/2 to 6	59	47 1/4	2 1/2	26	11
7 and 8	56	43 1/4	3 to 6	28	13
9 and 10	54	41 1/4	7 to 12	26	11
11 and 12	53	40 1/4			

Butt Weld, extra strong, plain ends

1/4	41	24 1/4	2 to 3	61	50 1/2
1/2 to 3/8	47	30 1/4	1/4 to 3/8	+11	+54
1/2	53	42 1/4	1/2	21	7
3/4	58	47 1/4	3/4	28	12
1 to 1 1/2	60	49 1/4	1 to 1 1/2	30	14

Lap Weld, extra strong, plain ends

2	53	42 1/4	2	23	9
2 1/2 to 4	57	46 1/4	2 1/2 to 4	29	15
4 1/2 to 6	56	45 1/4	4 1/2 to 6	28	14
7 to 8	52	39 1/4	7 to 8	21	7
9 and 10	45	32 1/4	9 to 12	16	2
11 and 12	44	31 1/4			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1 1/2 point, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2 1/2 per cent beyond the above discount.

Notes—The above discounts on steel pipe also apply at Lorain, Ohio. Chicago district mills have a base 2 points less. Chicago delivered base 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel	Charcoal Iron
2 to 2 1/4 in.....27	1 1/2 in.....+18
2 1/4 to 2 3/4 in.....37	1 3/4 to 1 1/2 in.....+8
3 in.....40	2 to 2 1/4 in.....-2
3 1/4 to 3 3/4 in.....42 1/2	2 1/4 to 3 in.....-7
4 to 13 in.....46	3 1/4 to 4 1/2 in.....-9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.....60	3 in.....45
1 1/4 and 1 1/2 in.....52	3 1/4 to 3 1/2 in.....47
1 3/4 in.....36	4 in.....50
2 to 2 1/4 in.....31	4 1/2, 5 and 6 in.....45
2 1/2 and 2 3/4 in.....39	

Hot Rolled

2 and 2 1/4 in.....34	3 1/4 to 3 1/2 in.....50
3 1/4 and 2 3/4 in.....42	4 in.....53
3 in.....48	4 1/2, 5 and 6 in.....48

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing (New List)

Carbon 0.10 to 0.30 base.....50 to 55 per cent off list
Carbon 0.30 to 0.40 base.....45 to 50 per cent off list
Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

Prices of Iron and Steel Products and Raw Materials

Ores

<i>Lake Superior Ores, Delivered Lower Lake Ports</i>	
Old range Bessemer, 51.50 per cent iron.....	\$4.55
Old range non-Bessemer, 51½ per cent iron.....	4.40
Mesaba Bessemer, 51.50 per cent iron.....	4.40
Mesaba non-Bessemer, 51.50 per cent iron.....	4.25
High phosphorus iron, 51.50 per cent.....	4.15
<i>Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore</i>	
Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus	45c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	\$12.00 to \$13.00
Chrome ore, Indian basic, 48 per cent Cr ₂ O ₃ , crude, per ton, c.i.f., Atlantic seaboard...	20.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS ₃ , New York.....	65c. to 70c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt.....	\$3.50 to \$3.65
Foundry coke, f.o.b. Connellsville prompt.....	4.25 to 5.00
Mine run steam coal, f.o.b. W. Pa. mines.....	1.50 to 2.10
Mine run coking coal, f.o.b. W. Pa. mines.....	1.65 to 1.90
Mine run gas coal, f.o.b. W. Pa. mines.....	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines.....	1.25 to 1.35
Gas slack, f.o.b. W. Pa. mines.....	1.50 to 1.60

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....	\$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid.....	115.00
Ferrosilicon, 50 per cent, delivered.....	82.50 to 85.00
Ferrosilicon, 75 per cent.....	145.00 to 147.50
Ferrotungsten, per lb. contained metal.....	1.15 to 1.20
Ferrocromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium	\$3.50 to \$4.00
Ferrocobaltititanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....	\$31.00 to \$33.00
Spiegeleisen, domestic, 16 to 19 per cent.....	30.00 to 32.00
Ferrosilicon, Bessemer, 10 per cent, \$33; 11 per cent, \$35; 12 per cent, \$37; electric furnace ferrosilicon, 10 per cent, \$38 furnace; 11 per cent, \$38; 12 per cent, \$38; 14 to 16 per cent, \$45.	
Silvery iron, 6 per cent, \$25.50; 7 per cent, \$26.50; 8 per cent, \$27.50; 9 per cent, \$29; 10 per cent, \$31; 11 per cent, \$33; 12 per cent, \$35.	

Fluxes and Refractories

Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, gravel, per net ton, f.o.b. Illinois and Kentucky mines	\$16.00
No. 2 lump, per net ton.....	19.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton.....	1e.00
Fluorspar, No. 1 ground bulk, 95 to 98 per cent calcium fluoride, not over 2½ per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	\$2.50
Per 1000 f.o.b. works:	
Fire Clay	
Pennsylvania	\$43.00 to \$46.00
Maryland	48.00 to 50.00
Ohio	43.00 to 46.00
Kentucky	43.00 to 45.00
Illinois	43.00 to 45.00
Missouri	40.00 to 43.00
Ground fire clay, per ton.....	6.50 to 7.50
Silica Brick:	
Pennsylvania	40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton.....	8.00 to 9.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....	40.00
Chrome Brick:	
Standard size, per net ton.....	48.00

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)	
Machine bolts, small rolled threads.. 60 and 10 per cent off list	
Machine bolts, all sizes, cut threads, 50, 10 and 10 per cent off list	
Carriage bolts, smaller and shorter, rolled threads, 50, 10 and 10 per cent off list	
Carriage bolts, cut threads, all sizes. 50 and 10 per cent off list	
Eagle carriage bolts..... 65 and 10 per cent off list	
Lag bolts	60, 10 and 10 per cent off list
Flow bolts, Nos. 3 and 7 heads.....	50 and 10 per cent off list
Other style heads	20 per cent extra

Machine bolts, c.p.c. and t. nuts, % x 4 in.,

Larger and longer sizes.....	45, 10 and 5 per cent off list
Hot-pressed nuts, blank and tapped, square.....	4c. off list
Hot-pressed nuts, blank or tapped, hexagons.....	4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped.....	4.10c. off list
Bolt ends with hot pressed nuts.. 50, 10 and 10 per cent off list	
Bolt ends with cold pressed nuts.. 45, 10 and 5 per cent off list	
Washers.....	6.50c. to 6.25c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:

¾ in. and smaller, U. S. S.....	80, 10 and 5 per cent off list
¾ in. and larger, U. S. S.....	75, 10 and 5 per cent off list
Small sizes, S. A. E.....	80, 10, 10 and 5 per cent off list
S. A. E., ¾ in. and larger.....	75, 10, 10 and 5 per cent off list
Stove bolts in packages.....	80, 10 and 5 per cent off list
Stove bolts in bulk	80, 10, 5 and 2½ per cent off list
Tire bolts	60 and 5 per cent off list

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

Per 100 Net		Per 100 Net	
S. A. E.	U. S. S.	S. A. E.	U. S. S.
¾ in.	\$0.44 \$0.44	¾ in.	\$2.35 \$2.40
¾ in. ....	.515 .515	¾ in.	3.60 3.60
¾ in. ....	.62 .66	1 in.	5.65 5.80
¾ in. ....	.79 .90	1½ in.	8.90 8.90
¾ in.	1.01 1.05	1½ in.	12.60 13.10
¾ in.	1.38 1.42	1½ in.	18.35 18.35
¾ in.	1.70 1.73	1½ in.	21.00 21.00

Larger sizes—Prices on application.

Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws	80, 10 and 5 per cent off list
Milled standard set screws, case hardened, 80 and 10 per cent off list	
Milled headless set screws, cut thread, 80 and 10 to 80 per cent off list	
Upset hex. head cap screws, U. S. S. Thread, 80, 10, 10 and 5 per cent off list	
Upset hex. cap screws, S. A. E. Thread, 80, 10 and 5 per cent off list	
Upset set screws	80, 10 and 10 per cent off list
Milled studs	75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over.....	\$33.50 to \$35.00
Forging billets, ordinary	40.00
Forging billets, guaranteed	45.00
Sheet bars	35.00
Slabs	\$33.50 to 35.00
*Wire rods, common soft, base, No. 5 to ¾ in.....	45.00
Wire rods, common soft, coarser than ¾ in.....	\$2.50 over base
Wire rods, screw stock.....	\$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40.....	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55.....	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75.....	7.50 per ton over base
Wire rods, carbon over 0.75.....	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.....	1.90c.
Skelp, sheared, per lb.....	1.90c.
Skelp, universal, per lb.....	1.90c.

*Chicago mill base is \$46. Cleveland mill base, \$45.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E.	Series	Bars
Numbers		100 lb.
2100*	(½% Nickel, 10 to 20 per cent Carbon).....	\$2.00 to \$2.25
2300	(3% Nickel)	4.50 to 4.75
2500	(5% Nickel)	5.75 to 6.00
3100	(Nickel Chromium)	3.50 to 3.65
3200	(Nickel Chromium)	5.00 to 5.25
3300	(Nickel Chromium)	7.50 to 7.75
3400	(Nickel Chromium)	6.25 to 6.50
5100	(Chromium Steel)	3.25 to 3.50
5200*	(Chromium Steel)	7.50 to 8.00
6100	(Chromium Vanadium bars)	4.25 to 4.50
6100	(Chromium Vanadium spring steel).....	4.00 to 4.25
9250	(Silicon Manganese spring steel).....	3.25 to 3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)		4.00 to 4.25
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)		4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)		4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum).....		3.60 to 3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)		4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

STRUCTURAL STEEL

Week's Awards Total 49,000 Tons—New York Building to Take 25,000 Tons

Another exceptional week in structural steel lettings, with a total of approximately 49,000 tons, gives an indication that October structural business may exceed that of September, which was the best month of the year so far. The largest award was 8000 tons for a New York hotel. Work in the New York metropolitan area accounted for more than half of the week's awards. A bridge at Pittsburgh, 6700 tons, was the largest award outside of New York. In a total of 35,000 tons of projects pending is 25,000 tons for what is to be the largest office building in the world, to be erected in New York.

Savoy-Plaza Hotel, Fifth Avenue at Fifty-ninth Street, New York, 8000 tons, to American Bridge Co.

Harriman Building, Fifth Avenue at Forty-third Street, New York, 3000 tons, to Levering & Garrigues Co.

Minskoff loft building, from Thirty-sixth to Thirty-seventh Streets, near Eighth Avenue, New York, 2800 tons, to Hedden Iron Construction Co.

Hotel, West Seventy-second Street, New York, 2000 tons, to Taylor-Fichter Steel Construction Co.

Hotel, Seventh Avenue from Fifty-fifth to Fifty-sixth Streets, New York, previously reported as 3000 tons, has been increased to 7000 tons, the entire tonnage having been awarded to the Harris Structural Steel Co.

Apartment building, Great Neck, N. Y., 600 tons, to an unnamed fabricator.

Loft building, 348 West Thirty-sixth Street, New York, 400 tons, to Taylor-Fichter Steel Construction Co.

Adelstein apartment building, 120 West Seventy-ninth Street, New York, 800 tons, to Hay Foundry & Iron Works.

Dupont artificial silk plant, Buffalo, N. Y., 1600 tons, to McClintic-Marshall Co.

Junior high school, Albany, N. Y., 1400 tons, previously reported as awarded to an unnamed fabricator, has gone to the Phoenix Bridge Co.

Theater, Brooklyn, 300 tons, to George A. Just Co.

Theater, Long Island City, N. Y., 400 tons, to George A. Just Co.

Apartment building, West Eighty-sixth Street, New York, 500 tons, to A. E. Norton, Inc.

Apartment building, Fifth Avenue and Ninety-fourth Street, New York, 700 tons, to Harris Structural Steel Co.

Apartment building for Arthur Brisbane, 5 East Fifty-seventh Street, 800 tons, to American Bridge Co.

Harvard Business School, Cambridge, Mass., group of buildings, 2500 tons to New England Structural Co.

Apartment house, 250 Beacon Street, Boston, 325 tons, to New England Structural Co.

High School, New Bedford, Mass., 300 tons, to Providence Steel & Iron Co.

Bates College, Lewiston, Me., athletic building, 245 tons, to New England Structural Co.

Gloucester Electric Co., Gloucester, Mass., boiler house, 180 tons, to New England Structural Co.

Oven building, extruding plant, etc., Providence, R. I., 125 tons, to New England Structural Co.

Rivoli Theater, Boston, 125 tons, to New England Structural Co.

Business block, Manchester, N. H., 100 tons, to Palmer Steel Co., Springfield, Mass.

Harvard College, Cambridge, Mass., dormitory, 100 tons, to New England Structural Co.

LeRoy apartments, Rochester, N. Y., 150 tons, to R. S. McMannus Steel Construction Co.

Point bridge, Pittsburgh, 6700 tons, to Fort Pitt Bridge Works.

Crucible Steel Co. of America, Park works, Pittsburgh, 1600 tons, to American Bridge Co.

Ansonia Copper & Iron Works, Cincinnati, two fermenter tanks at Terre Haute, Ind., previously reported to Stacey Brothers Gas Construction Co., to Stacey Mfg. Co.

Southern Indiana Gas & Electric Co., gas holder at Evansville, Ind., 200 tons, previously reported to Stacey Brothers Gas Construction Co., to Stacey Mfg. Co.

Great Northern Railway Co., bridges, 2105 tons, to American Bridge Co., through riveted truss spans, 465 tons, to Wisconsin Bridge & Iron Co.

Piccadilly Theater, Chicago, 1208 tons, to Gage Structural Steel Co.

Za-Ga-Zig Shrine Temple, Des Moines, Iowa, 918 tons, to St. Louis Structural Steel Co.

Rockford school, Rockford, Ill., 370 tons, to American Bridge Co.

Lloyd department store and theater, South Bend, Ind., 357 tons, to unnamed fabricator.

Great Northern Transit Co., Minneapolis, Minn., garage and bus station, 264 tons, to Minneapolis Steel & Machinery Co.

Chicago garages, Incorporated Garage, Chicago, 175 tons, to New City Iron Works.

Vogue Theater, Chicago, 195 tons, to Garden City Iron Works.

Calaveras Cement Co., San Andreas, Cal., 800 tons, to Minneapolis Steel & Machinery Co.

Apartment building, Sutter near Leavenworth Street, San Francisco, 154 tons, to Schrader Iron Works.

Puyallup River Bridge State road No. 5, near Tacoma, Wash., 167 tons, to Wallace Equipment Co.

Newspaper office building, Bellingham, Wash., 237 tons, to Wallace Equipment Co.

Pan-American Petroleum & Transport Co., tank work at San Pedro, Cal., 225 tons, to Steel Tank & Pipe Co.

San Francisco Dredging company, San Francisco, 500 tons, to Pacific Coast Engineering Co.

Associated Oil Co., small tanks at Salinas, Cal., 100 tons, to Steel Tank & Pipe Co.

Cleveland Stone Co., mill building at Amherst, Ohio, 350 tons, to Forest City Structural Iron Co.

General Electric Co., Buffalo, addition to power house, 1000 tons, to Fort Pitt Bridge Works.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Eastern Offices, Inc., office building adjoining Grand Central Terminal, New York, 25,000 to 30,000 tons.

Apartment building, Jersey City, N. J., 1500 tons.

Saranac Hotel, Saranac, N. Y., 400 tons.

Apartment building, Fifty-fourth Street and Sixth Avenue, New York, 2000 tons.

Trade school Bridgeport, Conn., 300 tons.

Highway bridge over Susquehanna River at Halstead, Pa., 500 tons.

Selby Shoe Co., Portsmouth, Ohio, plant addition at Ironton, Ohio, 300 tons.

Chevrolet Motor Co., Norwood, Ohio, 100 tons.

Ohio State University, Columbus, Ohio, Pomerene Hall, 140 tons.

Boulevard Hotel, Market and Twenty-eighth Streets, Oakland, Cal., 2400 tons.

Two bridges for San Bernardino County, 100 tons.

Border line highway bridge across the Gila River, between California and Arizona, bids to be taken at Phoenix, Ariz., 500 tons.

San Francisco export company, San Francisco, 1400 tons.

Old National Bank, Lima, Ohio, 500 tons.

RAILROAD EQUIPMENT

Inquiries for a Total of 2500 Freight Cars—500 Ordered

An order for 500 all-steel gondolas and inquiries for a total of 2500 freight cars comprise the important features of the railroad equipment business of the week.

September shipments of locomotives from the leading plants totaled 94, as compared with 104 in August and 104 in September, 1924.

The principal items follow:

The Louisville & Nashville has increased its order for 500 all-steel gondolas, placed with the Pressed Steel Car Co., to 1000. This makes the total number of cars ordered by this road within the past two weeks 1750. This road has also ordered 26 coaches from the American Car & Foundry Co. and 10 baggage and 4 combination cars from the Pressed Steel Car Co.

The St. Louis-San Francisco is inquiring for 500 composite gondola cars and 500 automobile cars.

The Atlantic Coast Line has entered the market for 500 composite gondola cars.

The American Locomotive Co. has received an additional order from the Chesapeake & Ohio for 20 engines, making a total of 70.

The New York Central is in the market for 1000 all-steel box cars.

The Tidal Refining Co. has ordered 125 40-ton tank cars from the American Car & Foundry Co.

The Missouri Pacific has ordered 15 steel baggage cars from the American Car & Foundry Co.

The Wabash has placed an order with the American Car & Foundry Co. for 12 replacement automobile cars.

PERSONAL

H. G. Dalton, who has been selected by President Coolidge as his personal representative in straightening out the affairs of the U. S. Shipping Board and Emergency Fleet Corporation, is a member of the firm of Pickands, Mather & Co., Cleveland, and has long held a prominent position in the iron industry. He has charge of all the general activities of the Cleveland firm, including the mining and shipping of iron ore and the production of pig iron and coal. Mr. Dalton when a boy secured work on the ore docks of Cleveland and his advance with the firm of which he is now the active head was rapid. He is president of the Interlake Steamship Co., a Pickands, Mather & Co. subsidiary whose fleet is the second in size on the Great Lakes, and vice-president of the Youngstown Sheet & Tube Co., Youngstown, Ohio. To his sound judgment and business insight are joined remarkable energy and the closest attention to the affairs of his firm; yet with all his success he has the trait of uncommon modesty. Mr. Dalton has never taken an active part in politics and this is the first time he has accepted a public duty, apart from his service as a member of the American Iron and Steel Institute committee in the steel price-fixing conferences at Washington during the war. He is deeply interested in educational work and recently gave \$400,000 for the erection of the Samuel Mather Science Hall at Kenyon College, Gambier, Ohio. Because of his broad business experience, including his activities in lake shipping, he is eminently qualified for the difficult task to which he has been called.



H. G. DALTON

Mr. Dalton will take under consideration the merits of the differences between the Shipping Board and Admiral Palmer, who has been stripped of his power as head of the Emergency Fleet Corporation to conduct operations of the ships and to determine the policy with regard to their disposal. A complete recasting of the shipping policy may result from the report Mr. Dalton will lay before the President. There are also differences within the board itself which will enter into the inquiry. It has been stated at the White House that President Coolidge will insist absolutely that the American merchant marine be continued on the high seas, whether it be by Government or private operation or both.

President James A. Farrell of the United States Steel Corporation was reelected chairman of the National Foreign Trade Council at the annual meeting held at the Metropolitan Club, New York, Oct. 1. O. K. Davis was reelected secretary and Robert H. Patchin, of W. R. Grace & Co., treasurer. In addressing the council Mr. Farrell said that no other European country had made a showing in increase of foreign trade since 1913 equal to that of France. Against an adverse trade balance of \$300,000,000 in 1913, France had a favorable balance of \$162,000,000 last year. He estimated the increase in foreign trade of the United States in the same 11 years at 30 per cent, values being adjusted to the 1913 basis. Great Britain is 5 per cent behind 1913, while Germany has recovered little less than half of her 1913 export trade.

William W. McFate, who recently resigned as director of Trumbull Steel Co., Warren, Ohio, has tendered his resignation as vice-president, and A. L.

Button has resigned as secretary. The duties of the two offices will be combined with those of other officers of the company. W. H. B. Ward resigned as superintendent of operations but continues as vice-president and a director. Fred W. Wille, consulting engineer, has resigned. These changes followed the recent inauguration of a retrenchment program by the Trumbull company.

Henry Seabrook, Philadelphia district manager Westinghouse Electric & Mfg. Co., who recently completed 25 years' continuous connection with that organization was the guest of honor at a luncheon given by twenty fellow executives at the Manufacturer's Country Club, Philadelphia.

George D. Babcock for some years in charge of manufacturing for the Holt Mfg. Co., with headquarters at Peoria, Ill., and before that engaged in a similar capacity with the H. H. Franklin Mfg. Co., Syracuse, has joined the Dodge Brothers organization at Detroit, where he will be active also in manufacturing work. Mr. Babcock left the Franklin automobile plant at the time the United States entered the war and served as lieutenant colonel in the ordnance department, U. S. A.

Oscar E. Gressly, chief engineer of the Jones & Laughlin Steel Corporation since 1907, has been forced to resign because of poor health. Carl W. Littler assumed Mr. Gressly's duties on Sept. 1.

Paul Llewellyn, formerly vice-president in charge of sales Interstate Iron & Steel Co., Chicago, was elected, effective Sept. 29, to the office of president of the company to succeed his father the late Silas J. Llewellyn. Mr. Llewellyn received his education at Mercersburg Academy, and at the Sheffield Scientific School of Yale University. In 1908 he entered the service of the Interstate Iron & Steel Co. at its Cambridge, Ohio, plant and two years later was placed in charge of operations. He was made assistant works manager of the East Chicago works in 1912 and became manager of that plant in 1914. Two years later his responsibilities were enlarged by having the management of the South Chicago works placed with him. In 1918 he entered the service of the United States Army as a captain in the procurement department of the Chemical Warfare Division and in September, 1918, he was promoted to major. Upon being discharged from military service he entered the sales department of the Interstate Iron & Steel Co., and in 1921 was elected vice-president in charge of sales, which position he held until his recent election to the presidency.



PAUL LLEWELLYN

A. E. Kistner has been appointed manager of the Cincinnati office of the Truscon Steel Co., Youngstown. He will succeed A. Levinson who has resigned to engage in real estate in Florida. Mr. Kistner has been associated with the Cincinnati office for several years.

R. E. Bock has been appointed Chicago district manager of the Ohio Electric & Controllor Co., Cleveland. Offices will be at 53 West Jackson Boulevard, Chicago.

John Neild, for the past five years secretary and treasurer of the Precision Engineering Co., Jamestown, N. Y., manufacturer of special machinery, has resigned and will become president of the Rane Tool

Co., Jamestown, recently organized to manufacture tools, gages and special machinery.

L. S. Longenecker, formerly refractories engineer Jones & Laughlin Steel Corporation, Pittsburgh, has been appointed Pittsburgh district representative the Vitrefrax Co., Los Angeles, with offices at 409 Bessemer Building.

Percy Owen, chief of the automotive division, Department of Commerce, Washington, joined Dodge Brothers, Inc., Detroit, Oct. 1, as director of foreign sales. From 1912-15 he was sales manager of the Chalmers Motor Car Co., Detroit. In 1915 he was vice-president of the Saxon Motor Car Co., and from 1916-24 he was president of the Liberty Motor Car Co.

G. H. Blaker, formerly of New York City, has been made sales manager of the Anderson Engine & Foundry Co., Anderson, Ind. He succeeds R. G. Gray, who has been transferred to the Southeastern territory of the company.

W. H. Rastall, chief of the Industrial Machinery Division, Department of Commerce, Washington, has left on a trip to Pittsburgh, Cleveland, Columbus and Cincinnati, where he is meeting machinery manufacturers with a view to discussing the foreign as well as the domestic market conditions in the industrial machinery industry.

Charles W. Sager, president of the Sager Lock Co., North Chicago, Ill., prior to its purchase by the Yale & Towne Mfg. Co., Stamford, Conn., has been elected vice-president of the Yale & Towne Mfg. Co., and will be the active manager of both the Sager works at North Chicago and the Barrow Works at Lockport, Ill., as the two new units of the Connecticut company will be known.

Major A. E. Bellis, president Bellis Heat Treating Co., Branford, Conn., is to address the Indianapolis Chapter of the American Society for Steel Treating on the evening of Oct. 12 at the Y. M. C. A. auditorium in that city on "Salt Baths."

OBITUARY

CLARENCE O. BARRIE, superintendent of buildings and equipment, Allis-Chalmers Mfg. Co., Milwaukee, Wis., was killed Sept. 28, at a Chicago, Milwaukee & St. Paul Railroad crossing in Cudahy, Wis. Mr. Barrie and a companion, W. R. Fortney, Chicago representative Landis Tool Co., Waynesboro, Pa., had just left a plant meeting in Milwaukee and were driving to the old Worthington plant in Cudahy.



CLARENCE O. BARRIE

Mr. Barrie died a short time after the accident at the Milwaukee emergency hospital, while Mr. Fortney was killed instantly. Mr. Barrie had a host of friends in the Milwaukee and Chicago districts and his sudden death was a shock to all. He was particularly admired for his fair and considerate attitude in all his business dealings. He was born

Aug. 8, 1874, at Manitowoc, Wis., and was educated in the public schools of that city. He started with the Allis-Chalmers Mfg. Co. 19 years ago as a machine operator and worked his way up to the position of one of the principal plant executives. He was a member of the Machinery Club of Chicago and the Chicago Athletic Club. The funeral was held in Milwaukee on Oct. 1. W. R. FORTNEY, aged 33, was a mechanical engineer and had been with the Landis Tool Co. since 1918. He has represented the company in Chicago since 1922.

EDWARD DE MILLE CAMPBELL, professor of chemistry and metallurgy and director of the chemical laboratory, University of Michigan, Ann Arbor, who died at his home in that city, Sept. 19, was one of the leading metallurgists and chemists of the country, achieving unusual distinction, particularly in spite of his blindness, which afflicted him in 1892. Most of his important work was accomplished after that date. Born Sept. 9, 1863, he was graduated from the University of Michigan in 1886. He was a chemist for several iron companies, such as the Ohio Iron Co., Zanesville, Ohio, from 1886 to 1887; the Sharon Iron Co., Sharon, Pa., from 1887 to 1888, and the Dayton Coal & Iron Co., Dayton, Ohio, from 1888 to 1890. In that year he became assistant professor of metallurgy at the Uni-

versity of Michigan and a junior professor of metallurgy and metallurgical chemistry in 1893. Twelve years later he became junior professor of analytical chemistry and in 1914 he was made professor of chemistry and director of chemical laboratories, assuming in 1920 the position which he held at his death. During the war he was a consulting chemist for the Ordnance Department. After his blindness, which was due to a laboratory explosion, he formed a group of five of his most advanced students, who read to him current chemical and metallurgical literature of the day. He was made an honorary member of the American Society for Steel Treating in June, 1921, in recognition of his research work. Those attending the convention of that society in Boston in September, 1924, vividly remember his presence at several of the technical sessions and his impressive participation in some of the discussions. He was also a member of the American Chemical Society, the Iron and Steel Institute, the Faraday Society and several other organizations.

DANIEL W. MCCARTHY, aged 53 years, founder and manager Julian Pump & Mfg. Co., Jamestown, N. Y., maker of electric gasoline pumps, died at his home in that city Sept. 25 of heart trouble, following a short illness.

ADOLPHUS D. HARRISON, president Harrison Machine Co., Rochester, N. Y., died at his home in that city Sept. 30, following a short illness. He was born in Norfolk, Va., 39 years ago and came to Rochester when a young man. The firm which bears his name was organized five years ago.

HARRISON PIERCE REED, general manager A. Kieckhefer Elevator Co., Milwaukee, died at Columbia Hospital, in that city, on Sept. 28, following an operation for abscess of the brain. He was born in Milwaukee 39 years ago and following his graduation from Cornell University, became associated with the elevator department of the Cutler-Hammer Mfg. Co. In 1922 he resigned to assume the general management of the Kieckhefer company, builder of electric freight and passenger elevators.

DAVID I. DAWBARN, of Liverpool, Eng., sales engineer Allis-Chalmers Mfg. Co., who came to Milwaukee in May to obtain practical manufacturing experience at the main works, was killed, and H. M. Black, of Toronto, Ont., engaged in a similar capacity, was badly hurt on Oct. 1 when Mr. Dawbarn's automobile was wrecked on a slippery pavement when he attempted to avoid a pedestrian.

CHARLES OSCAR JOHNSON, aged 59, president and general manager Worcester Wire Works, Inc., died Sept. 30 at his home in Worcester, Mass. He was a native of Orebro, Sweden, and came to the United States 41 years ago.

Heavy Gain in Steel Exports

Largest Total Since January, 1924—Imports
Also Greater Than July, but Less
Than June

WASHINGTON, Sept. 28.—Reflecting an increase of 50,293 gross tons, or 36.3 per cent, exports of iron and steel in August aggregated 188,963 tons, valued at \$21,250,056, against 138,670 tons in July. The gains were made in practically all of the major lines and were particularly marked in tubular products, the August total of this list being 36,587 tons, compared with 21,444 tons in July. For the eight months ended with August exports were 1,169,920 tons, valued at \$147,877,228.

Imports also showed an increase in August, amounting to 68,489 tons, valued at \$2,969,317, the gain of 3847 tons over the July total of 64,642 tons being due principally to the heavier incoming shipments of pig iron, which were 30,707 tons in August as against 24,881 tons. This and other gains were partially offset by reason of the decline in imports of such finished lines as rails, structural shapes, steel bars and tubular

products. Imports of iron ore in August totaled 170,660 tons, while imports of manganese ore amounted to 34,168 tons of manganese content. For the eight

Sources of American Imports of Pig Iron by Countries of Origin and Ports of Entry in August, 1925

Country of Origin	Customs District	Gross Tons	Totals by Countries
Belgium	Philadelphia	100	100
Germany	Massachusetts	1,000	
	Washington	409	1,409
Netherlands	Massachusetts	3,359	
	New York	550	
	Philadelphia	50	
	Los Angeles	250	
	San Francisco	950	
	Oregon	150	5,309
Sweden	New York	52	
	Maryland	513	565
United Kingdom	Philadelphia	3,150	
	New Orleans	200	3,350
India	Massachusetts	7,525	
	New York	3,732	
	Philadelphia	8,281	
	Galveston	237	19,775
Other countries		199	199
Total			30,707

Receipts by Leading Ports of Entry (Gross Tons)

Massachusetts	11,884
Philadelphia	11,581
New York	4,324

Imports Into the United States of Iron and Steel Products by Countries During August, 1925

(In Gross Tons)			
Country	Tons	Country	Tons
Belgium	13,152	British India	19,775
Czechoslovakia	530	Ceylon	5
France	8,197	Java and Madura	3
Germany	4,295	Hongkong	2
Italy	14	Japan	2
Netherlands	5,522	Kwangtung, leased territory	44
Norway	148	Asia	19,831
Spain	7		
Sweden	2,372		
United Kingdom	6,969		
Europe	41,206	Belgian Kongo	271
Canada	7,163	Other French Africa	1
Mexico	1	Africa	272
British West Indies	10		
Argentina	6	Total	68,489
America	7,180		

Imports of Iron and Steel into the United States (In Gross Tons)

	August		Eight Months Ended August	
	1925	1924	1925	1924
Pig iron	30,707	16,189	285,754	143,776
*Ferromanganese	3,369	801	47,899	21,410
Ferrosilicon	157	319	3,764	8,189
Scrap	6,602	7,027	61,017	37,720
Pig iron, ferroalloys and scrap	40,835	24,336	398,434	211,095
Steel ingots, blooms, billets, slabs and steel bars	915	2,392	19,372	27,176
Wire rods	528	408	5,161	5,137
Semi-finished steel	1,443	2,800	24,533	32,313
Rails and splice bars	3,031	9,034	30,388	32,175
Structural shapes	6,291	2,798	55,198	26,240
Boiler and other plates	125	73	358	2,745
Sheets and saw plates	311	488	2,558	1,865
Steel bars	4,458		39,371	
Bar iron	594	193	8,717	3,109
Tubular products	10,275	4,339	47,762	39,592
Nails and screws	278	14	1,987	288
Tin plate	13	9	211	915
Bolts, nuts, rivets and washers	20	6	73	107
Round iron and steel wire	405	281	2,633	2,563
Flat wire and strip steel	178	153	1,440	1,486
Wire rope and insulated wire, all kinds	122	292	1,603	9,250
Rolled and finished steel	26,101	17,680	192,299	120,335
Castings and forgings	110	112	1,127	1,890
Total	68,489	44,928	616,393	365,633
*Manganese ore	34,168	16,160	149,779	198,359
Iron ore	170,660	115,703	1,407,235	1,259,851
Magnetite	6,162	472	69,291	44,949

*Manganese content only, except ore from Cuba, of which there were no imports in August, 1925.

Sources of American Imports of Iron Ore (In Gross Tons)

	August		Eight Months Ended August	
	1925	1924	1925	1924
Chile	100,000	70,145	663,200	722,145
Cuba	15,512	7,600	353,630	207,790
Spain	6,600	41	130,125	32,695
Sweden	19,819	28,354	85,707	153,620
Algeria and Tunis	5,750	7,800	124,745	114,582
Canada	252	675	6,123	2,072
Other countries	22,727	1,088	44,705	26,947
Total	170,660	115,703	1,407,235	1,259,851

Imports of Iron and Steel in Gross Tons (By Months and Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
January, 1924	26,675	10,587	3,032	23,081
February	42,269	15,482	4,847	4,430
March	39,278	16,919	3,941	46,067
April	50,969	17,171	7,371	29,729
May	56,801	25,220	5,501	31,993
June	60,569	28,697	2,347	24,726
July	30,410	13,511	1,435	12,387
August	44,928	16,189	1,120	16,160
September	45,214	16,347	3,578	6,269
October	40,873	10,963	8,608	12,088
November	35,707	9,880	7,596	19,919
December	69,281	28,143	10,530	28,305
Twelve months' average	46,370	17,426	4,992	21,672
January, 1925	77,058	41,344	7,165	15,498
February	92,373	47,803	10,997	9,666
March	92,106	50,803	5,691	24,330
April	71,249	33,299	7,699	14,941
May	68,117	21,260	8,721	29,139
June	82,330	35,657	4,259	20,720
Twelve months' average	62,449	27,099	6,440	15,578
July	64,642	24,381	3,601	23,536
August	68,489	30,707	3,526	34,168
Eight months' average	77,049	35,719	6,458	18,722

*Not included in "total imports." These figures are for manganese contents of the ore.

months ended with August imports totaled 616,393 tons, valued at \$23,828,735.

Of the August exports, 54,979 tons went to Canada, the leading country of the foreign trade for the month. Colombia ranked second, taking 19,443 tons and Cuba was third, shipments to that country having amounted to 16,634 tons. Japan, which usually ranks much higher, was fifth, with 10,755 tons; China, in fourth place, took 11,055 tons. The position taken by Colombia in August was due to the fact that, of the 22,701 tons of casing and oil line pipe shipped abroad during the month, 13,916 tons went to that South American country. Another South American country, Venezuela, took 2564 tons of casing and oil line pipe in August.

Shipments to Canada related to most of the leading lines and, while no single commodity moved to that country in large quantities, the aggregate of all of them continued to give first rank to Canada as a source of consumption of American exports. Of the 10,599 tons of steel bars exported in August, Canada took 5551 tons, while 1480 tons went to the United King-

dom, 981 tons to Chile and 927 tons to Cuba. Of structural steel, Canada took 9081 tons of the total of 11,170 tons. Cuba, with 1005 tons, was in second position.

Imports from India, the leading source of foreign shipments, totaled 19,775 tons, all of which was pig iron, exclusive of manganese ore. Belgium was the next largest source of imports in August, 13,152 tons coming from that country. Of the Indian pig iron imports, 8281 were received at the port of Philadelphia, while the imports through the Massachusetts customs district of Indian iron amounted to 7525 tons. Of the total pig iron imports, 11,884 tons were received in the Massachusetts district and 11,581 tons at Philadelphia. The invoice value of the Indian iron in August was \$16 per ton, against a general average of \$22.20 for the remainder of pig iron imports for that month.

Imports of cast iron pipe in August totaled 6122 tons, of which 5366 tons came from France, 2720 tons

Sources of Cast Iron Pipe Imports by Countries of Origin and Ports of Entry in August, 1925

Country of Origin	Customs District	Gross Tons	Totals by Countries
Belgium	Los Angeles	629	755
	San Francisco	126	
France	Massachusetts	1,141	5,366
	New York	1,460	
	Maryland	45	
	Los Angeles	2,720	
Canada	Maine and New Hampshire	1	1
Total			6,122

Exports of Iron and Steel from the United States (In Gross Tons)

	August		Eight Months Ended August	
	1925	1924	1925	1924
Pig iron	5,944	4,365	19,495	29,284
Ferromanganese		2	4,080	3,145
Ferrosilicon		18		726
Scrap	11,461	4,167	57,245	84,537
Pig iron, ferroalloys and scrap	17,405	8,552	80,820	117,692
Ingots, blooms, billets, sheet bar, skelp....	7,237	5,153	47,340	54,098
Wire rods	787	974	15,614	13,545
Semi-finished steel ..	8,024	6,127	62,954	67,643
Steel bars	10,599	7,389	73,596	72,512
Alloy steel bars.....	179	143	2,707	1,843
Iron bars	454	254	2,534	3,985
Plates, iron and steel	9,576	5,344	69,396	61,984
Sheets, galvanized ...	10,985	7,001	109,696	66,929
Sheets, black steel...	9,374	11,060	53,787	99,565
Sheets, black iron...	1,313	1,050	9,334	7,291
Hoops, bands, strip steel	3,544	2,301	25,864	24,597
Tin plate, terne plate, etc.	12,402	6,656	101,099	112,808
Structural shapes, plain material	11,170	13,778	61,065	78,652
Structural material, fabricated	7,247	5,591	45,060	47,844
Steel rails	25,468	18,006	121,222	139,230
Rail fastenings, switches, frogs, etc.	5,869	2,841	26,574	25,675
Boiler tubes, welded pipe and fittings....	36,587	17,682	167,664	154,111
Plain wire	3,034	2,493	25,075	29,139
Barbed wire and woven wire fencing	5,044	8,874	48,335	60,257
Wire cloth and screening	198	157	1,223	1,280
Wire rope	342	728	3,160	3,122
Wire nails	833	1,085	5,960	18,477
All other nails and tacks	743	584	6,175	5,011
Horseshoes	103	60	501	672
Bolts, nuts, rivets and washers, except track	1,810	2,005	11,808	11,821
Rolled and finished steel	156,874	115,082	972,855	1,026,805
Cast iron pipe and fittings	2,408	2,368	19,393	18,660
Car wheels and axles	1,536	1,447	14,229	13,849
Iron castings	1,038	560	6,541	5,870
Steel castings	262	414	3,298	4,324
Forgings	200	78	1,612	1,122
Castings and forgings	5,444	4,867	45,073	43,825
All other	1,216		8,238	
Total	188,963	134,628	1,169,920	1,255,965

Exports of Iron and Steel in Gross Tons

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914...	2,406,218	221,582	145,720
*Average, 1915 to 1918...	5,295,333	438,462	1,468,020
*Average, 1919 to 1923...	3,078,724	123,837	149,218
January, 1924	247,942	3,812	8,594
February	164,820	4,773	11,463
March	123,618	4,047	2,278
April	131,276	4,117	8,275
May	154,133	4,317	4,895
June	163,770	2,057	11,178
Fiscal year 1924.....	2,009,343	40,596	119,744
July	137,481	1,796	10,363
August	134,628	4,365	6,127
September	135,979	4,799	15,473
October	157,071	3,373	15,569
November	123,577	1,478	8,649
December	128,865	2,549	7,081
Calendar year 1924.....	1,792,421	41,478	114,417
January, 1925	140,802	1,298	5,764
February	101,665	1,413	7,516
March	154,178	2,037	7,951
April	154,426	1,632	6,831
May	150,612	2,316	7,360
June	136,847	2,507	7,804
Fiscal year 1925.....	1,647,024	29,563	107,988
July	138,670	2,348	10,701
August	188,963	5,944	8,024
Eight months	1,169,920	19,495	62,954

*Calendar years.

Exports of Iron and Steel Products from the United States During August, 1925, by Countries of Destination

(In Gross Tons)			
Belgium....	282	Java and Madura... 309	
Bulgaria....	110	Other Dutch East Indies 2,342	
Denmark....	175	Hejaz, Arabia, etc.. 15	
Finland....	24	Hongkong.... 181	
France....	369	Japan .....10,755	
Germany....	116	Kwangtung	62
Greece....	753	Palestine and Syria 57	
Irish Free State....	15	Philippine Islands... 2,127	
Italy.....	9,148	Siam.....	35
Malta, etc.	20	Turkey in Asia	56
Netherlands	176		
Norway....	402		
Portugal....	685		
Rumania....	255		
Russia in Europe..	124		
Spain.....	309		
Sweden....	21		
Switzerland	3		
Turkey in Europe..	155		
United Kingdom..	7,781		
Europe	20,923		
Canada	54,979		
British Honduras	8		
Costa Rica....	175		
Guatemala....	380		
Honduras....	650		
Nicaragua....	521		
Panama....	1,119		
Salvador....	3,567		
Mexico....	8,634		
North America..	70,038		
Miquelon...	2		
Newfoundland and Labrador.	67		
Bermuda....	25		
Barbados....	4		
Jamaica....	123		
Trinidad & Tobago..	648		
Other Brit. W. Indies	439		
Cuba	16,634		
Dominican Republic.	1,882		
Dutch West Indies...	1,069		
Haiti.....	188		
Virgin Islands of U. S. ...	28		
American Islands ..	21,109		
Argentina....	6,069		
Bolivia....	109		
Brazil.....	7,123		
Chile.....	4,656		
Colombia	19,443		
Ecuador....	214		
British Guiana....	53		
Dutch Guiana....	133		
Peru.....	1,183		
Uruguay....	742		
Venezuela....	4,253		
South America....	43,978		
British India....	1,129		
Ceylon....	3		
Straits Settlements.	432		
China.....	11,055		
Chosen....	67		
Total	188,963		

of the French product being received at Los Angeles, 1460 tons at New York and 1141 tons in the Massachusetts district. More than half of all the imports of cast iron pipe—3475 tons, or 56 per cent—came in

on the Pacific seaboard. Of the manganese ore imports of 34,168 tons in August, 17,981 tons came from Brazil, 12,690 tons from Russia in Europe, 1920 tons from India and 1485 tons from British West Africa.

Machinery Exports Best in Four Years

August 20 Per Cent Over July and Up 28 Per Cent in Year—Highest Agricultural Machinery Exports Ever Recorded

WASHINGTON, Sept. 28.—Reaching the highest level since March, 1921, when the total was \$45,795,556, exports of machinery in August were valued at \$38,768,823, against \$32,320,533 in July. Displaying a reverse situation, August imports of machinery, amounting to \$747,912, were the lowest of the year, the next previous lower figure having been \$643,318, recorded in December, 1924. Exports of metal-working machinery continued to maintain their position above \$1,000,000, and in August were valued at \$1,308,372 for the 5240 tools shipped abroad, compared with 5122 tools, valued at \$1,188,069, in July. This was the highest value of metal-working machinery exports

since March of the present year, when the total was \$1,364,930.

For the eight months ended with August, 1925, machinery exports were valued at \$255,326,710, against \$216,183,208 for the corresponding period of 1924. For the eight months ended with August of the current year imports of machinery were valued at \$7,235,895, against \$6,360,777 for the corresponding period of last year. One feature of the machinery exports which brought them to their high level in August was the movement of agricultural machinery abroad, the value having been \$11,318,423. This is the highest figure ever reached, surpassing the previous "high" of \$7,960,824, April, 1925, by more than 42 per cent. There were consistent gains in many other lines.

Locomotive exports in August were valued at \$166,114. The heaviest exports in this line went to Brazil, which took four locomotives valued at \$91,422, while for the eight months 69 locomotives, valued at \$1,580,524, were shipped to that country from the United States.

The United Kingdom led as the principal destination of exports of sewing machines, typewriters and printing presses in August. Sewing machines shipped to the United Kingdom numbered 3800, valued at \$221,520,

United States Metal-Working Machinery Exports

	August, 1925		July, 1925	
	Number	Value	Number	Value
Lathes	129	\$307,652	118	\$245,423
Boring and drilling machines	474	87,679	138	69,268
Planers, shapers and slot-ters	26	63,724	22	28,905
Bending and power presses	40	39,145	46	78,882
Gear cutters	22	64,041	29	105,803
Milling machines	125	208,230	88	105,406
Thread-cutting and screw machines	123	113,535	57	63,511
Punching and shearing machines	36	16,004	24	31,374
Power hammers	16	16,490	31	34,531
Sharpening and grinding machines	117	275,470	117	282,026
Chucks, center, lathe, drill and other metal-working tools	3,015	34,166	2,834	30,685
Pneumatic portable tools..	1,117	82,236	1,618	112,255
Total	5,240	\$1,308,372	5,122	\$1,188,069

Imports of Machinery Into the United States

	(By Value)		Eight Months Ending August	
	August		1925	
	1925	1924	1925	1924
Metal-working machine tools	\$44,671	\$26,123	\$266,511	\$251,736
Agricultural machinery and implements	136,251	211,549	2,249,413	1,726,918
Electrical machinery and apparatus	65,410	66,222	541,707	296,391
Other power generating machinery ..	591	684	7,255	83,668
Other machinery	347,902	292,283	2,931,515	2,683,615
Vehicles except agricultural	153,087	55,855	1,239,494	1,318,449
Total	\$747,912	\$652,716	\$7,235,895	\$6,360,777

United States Exports and Imports of Machinery

	Exports of Machinery	Imports of Machinery	Exports of Metal-Working Machinery
1924			
August	30,286,511	652,716	813,241
September	24,460,750	746,485	575,460
October	28,094,797	604,226	834,806
November	25,502,430	1,354,600	715,327
December	22,796,442	643,318	867,616
The year	317,034,987	9,711,571	8,644,444
1925			
January	28,117,952	803,829	845,986
February	23,215,776	814,703	707,445
March	35,962,076	999,237	1,364,930
April	36,033,980	1,167,099	1,245,634
May	32,164,865	861,655	1,230,914
June	28,746,061	935,487	1,003,325
Fiscal year	338,715,075	10,404,337	10,776,079
July	32,320,533	905,872	1,188,069
August	38,768,823	747,912	1,308,372
Eight months..	255,326,710	7,235,895	8,894,675

Machinery Exports from the United States (By Value)

	August, 1925	August, 1924	Eight Months Ending August, 1925	Eight Months Ending August, 1924
Locomotives	\$166,114	\$560,903	\$3,083,904	\$2,437,902
Other Steam Engines	243,305	45,574	992,196	358,111
Boilers	189,715	182,222	1,412,703	1,347,178
Accessories and Parts	222,317	280,473	1,316,091	1,178,947
Automobile Engines	846,219	254,376	11,874,819	2,462,094
Other Internal Combustion Engines	1,012,666	940,703	8,780,878	4,068,115
Accessories and Parts for	366,838	326,674	2,782,440	2,524,192
Electric Locomotives	10,664	187,284	305,045	1,668,645
Other Electric Machinery and Apparatus	635,211	708,893	4,487,805	5,470,561
Excavating Machinery	304,525	410,860	2,416,634	1,674,420
Concrete Mixers	99,114	72,780	525,501	449,012
Road Making Machinery	126,824	268,573	972,657	846,036
Elevators and Elevator Machinery	190,155	168,147	1,489,383	1,131,152
Mining and Quarrying Machinery	797,077	904,784	6,789,798	6,877,332
Oil Well Machinery	892,215	631,437	6,663,880	4,554,393
Pumps	819,550	560,598	4,883,494	4,773,095
Lathes	307,652	141,602	1,655,637	779,619
Boring and Drilling Machines, Planers, Shapers and Slotters ..	87,679	40,711	485,518	371,727
Bending and Power Presses ..	63,724	41,923	439,590	208,081
Gear Cutters	39,145	36,444	410,610	203,951
Milling Machines	64,041	37,721	583,768	272,255
Thread Cutting and Screw Machines	208,230	73,926	1,147,579	337,445
Punching and Shearing Machines	113,535	46,058	720,868	410,383
Power Hammers	16,004	24,451	159,485	67,082
Sharpening and Grinding Machines	16,940	31,937	188,382	180,934
Other Metal Working Machinery and Parts of	275,470	214,421	2,142,916	921,107
Textile Machinery	502,705	380,197	3,757,424	2,899,881
Sewing Machines	952,781	722,910	7,172,817	5,913,154
Shoe Machinery	793,449	528,988	5,984,439	5,816,303
Flour-Mill and Gristmill Machinery	105,492	116,226	954,337	888,240
Sugar-Mill Machinery	100,967	37,853	628,370	532,056
Paper and Pulp Mill Machinery ..	1,032,710	1,649,998	4,123,898	3,991,016
Sawmill Machinery	112,008	162,133	936,415	1,542,225
Other Woodworking Machinery ..	67,931	39,769	522,945	351,859
Refrigerating and Ice Making Machinery	136,047	136,979	841,789	922,428
Air Compressors	201,545	196,827	1,009,383	1,174,982
Typewriters	326,545	224,002	2,000,637	2,022,801
Power Laundry Machinery	1,075,292	1,111,227	11,760,280	9,953,570
Typesetting Machines	134,772	75,839	739,586	686,677
Printing Presses	240,760	166,732	2,367,943	2,216,219
Agricultural Machinery and Implements	257,820	295,912	3,200,328	2,980,025
All Other Machinery and Parts ..	11,318,423	6,550,292	54,731,721	44,066,108
Total	\$38,768,823	\$30,280,939	\$255,326,710	\$216,183,208

while for the eight months sewing machines exported to that country totaled 22,444, valued at \$1,291,031. Typewriters exported to the United Kingdom in August totaled 5545, valued at \$292,753, and for the eight months' period they numbered 41,689, valued at \$2,248,446. Printing presses exported to the United Kingdom in August totaled 48, valued at \$83,111, and for the eight months they totaled 397, valued at \$817,048. Germany was the principal purchaser of adding

and calculating machines in August, taking 921, valued at \$272,155, while for the eight months exports of these machines to Germany totaled 4568, valued at \$1,601,042.

Argentina was the principal destination of August exports of harvesters and binders, taking 1135, valued at \$425,349, while exports of this class of machinery to that country during the eight months totaled 2682, valued at \$686,825.

CANADA MAKES MORE IRON

Output of Blast Furnaces Gains 27 Per Cent but Market Still Quiet

TORONTO, ONT., Sept. 21.—The production of pig iron in Canada for the month of August was 26,513 gross tons, an increase of 27 per cent over the 20,946 tons produced in July, according to a report just issued by the Dominion Bureau of Statistics. Comparing the August output with that of July, it is noted that basic iron made for the further use of the producers rose sharply from 73 tons in July to 5308 tons in August. Of the grades made for sale, malleable pig iron increased in output from 3206 tons in July to 4609 tons in August, while foundry iron dropped slightly from 17,667 tons in July to 16,596 tons in August. For the eight months ended with August the cumulative production of all grades of pig iron in Canada was 338,351 tons as against 495,658 tons for the corresponding period last year, or a drop of 32 per cent. This year's output consisted of 257,851 tons of basic iron, 56,009 tons of foundry iron and 24,491 tons of malleable. The active furnaces had a daily capacity of 1275 tons, or about 25 per cent of the total capacity of all blast furnaces in Canada.

Ferroalloy production at 2094 tons showed a slight drop from the 2209 tons of July, and consisted mostly of the grades having a high manganese content.

Ingot Production Also Increases

The production of steel ingots and castings, at 25,007 tons, showed a slight improvement over the 22,471 tons made in July. Compared with the previous month the increase in output during August was common to both ingots and castings, ingots increasing from 21,157 tons in July to 23,585 tons in August; and direct castings from 1314 tons in July to 1422 tons in the month under review. For the first eight months of

this year the cumulative production of ingots and castings amounted to 471,175 tons, a decline of 16 per cent from the output of 563,706 tons reported for the corresponding period last year.

Pig Iron Prices Unchanged

Pig iron prices for August were unchanged from those of July and June, the prevailing quotation being: No. 1 foundry (2.25 to 2.75 per cent silicon), \$24.85; malleable, \$24.85; No. 2 foundry (1.75 to 2.25 silicon), \$24.35, Toronto. At Montreal the differential between No. 1 and No. 2 foundry iron was dropped, with the result that No. 1, malleable, and No. 2, were all quoted at \$27.25.

Analysis of Pig Iron Output

While the report of the Dominion Bureau of Statistics takes the increased output of basic iron in August as an indication of expanding business in steel furnace and rolling mill products, the dull state of the iron and steel markets of this country does not point to a stronger demand for these products. During the month of July, when only two furnaces were blowing, 73 tons of basic iron was produced, which indicates that the Steel Co. of Canada, Ltd., and the Algoma Steel Corporation had their furnaces running on foundry and malleable iron throughout practically the entire month, piling iron against future demands of consumers. The fact that output of foundry iron in August was but slightly below the production in July, whereas the output of basic and malleable showed substantial increases, is due to the fact that the British Empire Steel Corporation blew in its No. 1 furnace for the production of foundry iron, while the Steel Co. of Canada again reverted to the production of basic to fill its own needs. Demand for pig iron in the Canadian market is slow and there is nothing to indicate any immediate revival in trade. There is, however, a feeling that prices will rise in keeping with recent advances reported in the United States.

AUTOMOBILES TO FAR EAST

Shipments to Nine Countries in First Half Increase in Number, Decrease in Value

Exports of automobiles from the United States to the area from Japan to Ceylon and New Zealand amounted in the first half of 1925 to 37,919 cars, with an export value of \$19,323,000, according to figures of the Department of Commerce. The corresponding figures for the first half of 1924 were 36,057 cars, valued at \$25,536,000. The average declared value last year was \$708; this year only \$510.

Curiously enough, the average value of shipments this year to all countries, except Australia and New Zealand, showed a higher average value than last year. The reduction in Australia, however, from \$719 to \$373, coupled with the fact that Australia took more than 60 per cent of the total number of cars each year, accounts for the decline in value. This decline for Australia alone was \$5,777,000, although the number of cars shipped to that destination increased by almost 5000.

In the table are shown the data covering number and value of cars and average value for the first half of each of the two years. The countries include Japan, China, India, Philippines, Dutch East Indies, Australia, New Zealand, Straits Settlements and Ceylon. Aside from the striking change in the character of the cars

sent to Australia this year, the most noticeable change was in the decrease in the number and value of cars sent to Japan. There were only 531 this year, against more than 6500 last year.

Destination	1925			1924		
	Number	Value	Average	Number	Value	Average
Japan	531	\$531,000	\$1,000	6,542	\$3,773,000	\$577
Philippines	2,210	1,511,000	684	1,630	1,038,000	637
Dutch East Indies						
India	751	677,000	901	778	634,000	815
China	756	588,000	778	811	580,000	715
India	1,673	1,277,000	763	1,437	989,000	688
Australia	26,806	9,994,000	373	21,932	15,771,000	719
New Zealand	4,404	3,969,000	901	2,276	3,238,000	983
Straits Settlements	331	305,000	921	326	223,000	684
Ceylon	457	471,000	1,031	325	290,000	892
Aggregate	37,919	\$19,323,000	\$510	36,057	\$25,536,000	\$708

The fall meeting of the Eastern States Blast Furnace and Coke Oven Association will be held at the Lafayette Hotel, Buffalo, Oct. 8. Charles R. Meissner, superintendent, coke plant, Weirton Steel Co., Weirton, W. Va., following the dinner will present a paper, "Operating Practice and Experience with 14-in. Becker Type Ovens." Arrangements have been made for golf at the Park Golf Club or the Buffalo Country Club and also for visits to any of the several steel and coke plants of Buffalo. The committee in charge of the Buffalo meeting comprises John T. Whiting, chairman; A. H. Harris, Jr., B. N. Marron, Paul Pool and Robert McClurkin.

New and Practical Safety Suggestions

(Continued from page 955)

high enough the rack is pulled out on the rolls to the transfer truck or placed so that it can be picked up by the crane and delivered to the punch press operator. When sizing or squaring a sheet that is too narrow, the operator removes it by placing it on a set of rolls mounted on the right of the shear. When the sheets are delivered to the punch press they are placed on an adjustable stand. The operator does no lifting but by a few turns of a jack screw raises the stock to the necessary height. If the material is fed into the die by hand this facilitates production and reduces fatigue. Sheets that are enameled are automatically stacked as they pass through the enameling rolls and are removed by an adjustable lifting device.

For handling flat punchings an adjustable stand is provided on which they are stacked by the operator as they come from the press. Another device called the tote plate is used for stacking and handling punchings. When the plate is filled, the crane places them on industrial cars. Large containers mounted on wheels are used to handle large drawn pieces.

Scrap is continually collected and taken to the baling machines in several types of containers. Scrap produced on the second floor is sent down a chute to the baling machines. After baling it is placed on a power driven conveyor, hoisted to an opening and dropped into a freight car.

Large dies are drilled and tapped so that eyelets may be used for lifting them by cranes. This practice is now carried out as the first operation in making new dies so that the die maker can also handle his work easily through the various operations. Electric trucks are used for handling dies stored beyond the reach of crane service.

Inspections are regularly made on all lifting equipment. Most falling accidents are caused by articles handled by the persons injured. A number have been due to cutting the back of hands while passing piles of sheets. To reduce these accidents angle pieces have

been placed at corners to protect the hands and the material is kept as far as possible from the aisles which have painted lines to preserve the regular aisle space. All hand trucks are being equipped with a support to hold the handle upright, which is expected to eliminate the tripping hazard.

At the round table conference John A. Oartel, Carnegie Steel Co., showed photographs of many safety devices used in the iron and steel industry. He exhibited a number of charts showing causes of accidents in the United States Steel Corporation plants and pictures of safety committees in these plants. He declared accidents in steel plants had been reduced from 25 to 80 per cent as a result of safety work.

J. A. Voss, safety director, Central Steel Co., Massillon, Ohio, stated that his company is eliminating the handling of oxygen tanks in its open-hearth plant by laying pipe lines and having a permanent place for the tanks at a safe point.

"Creating and Sustaining Interest in Safety" was discussed by H. D. Herron, chief safety inspector, International Harvester Co., who stressed the importance of foremen in safety work, saying that the foremen must have both the power and the responsibility in safety matters.

J. A. Voss, safety director of the Central Steel Co., said that the safety movement must be advertised. The safety man must keep interest alive. He is first the sales manager and then an advertising man. In his plant they kept up interest in safety by a weekly luncheon meeting attended by department heads. Foremen's meetings are also held. If a man is hurt, he appears before the next meeting to tell how the accident happened. A representative of the Walworth Mfg. Co., Boston, stated that his company has a large clock near the door and accidents are recorded by moving the hands. Below the clock is a blackboard giving the cause of the accidents.

"The safe handling of molten metal in the foundry" was discussed by E. H. Ballard, general foundry and pattern shop superintendent, River works, General Electric Co., West Lynn, Mass. Mr. Ballard's paper read, in part:

Safe Handling of Molten Metal

"Safety is not easily sold to the average employee. We believe one of the best salesmen is a good safety inspector who is constantly mingling with the employees, not as a watch dog, but as a protector and adviser. His very presence in danger zones has resulted in marked reductions in lost time accidents from handling molten metal, as well as other hazards, which we will show by comparison later.

"In one of the smaller plants employing about 600 people, it has been the practice for a number of years to utilize the services of our safety inspector by having each new employee presented to him and he in turn introduces the new man to the foreman on the job, acquainting him with the hazards, explaining the fundamental rules of safety, and the benefits offered by the company, also the new employee's responsibilities. Before the new employee commences work he signs an agreement to use all safety devices furnished him, wear molders' safety shoes if obliged to carry molten metal, and generally obey safety rules; also to report injuries, even slight, to the proper party. There is every evidence that this agreement entered into with new employees has been very beneficial.

In the plant above referred to, both iron and steel castings are produced. The hazards are naturally common to other plants producing a similar line of work.

Steel Foundry

"STEEL is produced in open-hearth furnaces, charging being done by machine, using the standard design of steel charging boxes, except that our boxes today are provided with numerous cored holes in the bottom to allow moisture to drain away prior to charging of material into the furnaces. Some years ago, before

drain holes were provided, on one occasion during winter, ice covered scrap was delivered to the furnace platform in charging boxes. After standing for some time the ice melted and as there were no provisions for escape of water, boxes when charged into furnace contained considerable water. When boxes were dumped, water coming in contact with hot furnace bath caused an explosion, resulting in damage to the roof. By providing drain holes this hazard has been entirely eliminated.

"We have lately provided a covered scrap storage, which also removes the hazard of charging wet scrap into the furnace. This covered storage building is more than paying the investment charge, and is considered a good safety measure.

"Our furnaces are tapped from the spout side of furnace into crane ladles from a swinging platform, well guarded, allowing men tapping out perfect freedom of action and protection from accident.

"All cranes are daily inspected mechanically and electrically, and each week every foot of cable is cleaned with kerosene and careful inspection made. Ladle bails are of the detachable type, and they also are systematically inspected, together with the ladle trunnions.

"We are obliged to transfer considerable portion of the steel from one building to another, which is done on a specially constructed ladle car of standard gage, with a storage battery transfer car as a moving agent. In transferring ladles of molten metal about the shop, it is always customary to have someone precede the crane, warning those who may be in the path of travel. Ladles are carried just as close to the floor as possible.

"In pouring steel, all men working about the pouring floor are provided with and use special glasses. The

upper portion of lenses are blue and plain glass in the lower sections. This combination allows clear vision for the men moving about safely; the upper section provides protection from the intense light of the hot metal and saves many injuries to eyes from flying sparks.

Rigidity Essential in Ladle Shells

"WE are firm believers that the utmost rigidity is essential in ladle shells, especially large capacity ladles used for steel, which prevents cracking of lining bricks and distortion which affects the slide mechanism. There is evidence that this point is sometimes overlooked.

Ladle Slides

"GEARING, stopper rods, and accessories; lead stoppers, sleeves and nozzles, are each in themselves vital factors in the safe handling of molten metal. Great care is given our ladle slides and rods. Black lead stoppers are aged for months in contact with low heat before use. Stopper rods are dried out for at least ten days prior to using. It seems to me too much attention to the details is impossible when we consider the important part the stopper mechanism plays in controlling the pouring of large masses of molten steel.

Iron Foundry

"ABOUT fifteen tons of molten metal are handled daily, all going into light work, which is hand poured. Each molder is provided with a pair of goggles, which he constantly uses when handling molten metal. From the stock room each molder secures daily a pair of standard leggings, and returns them when through for the day. By this system all leggings are inspected daily and kept in good condition and only those safe for use are given out. Daily inspection of safety shoes worn by the pouring gang is also made.

"During the casting period the safety inspector is usually found in front of the spout, and the dangerous practice, which was usually followed in days gone by of molders cutting into the stream to fill hand ladles, has gone, and one of the greatest hazards removed. By supplying metal to hand ladles from the reservoir ladle, a safe and sane method has superseded the

dangerous one, and lost time accidents reduced to the minimum.

"Cast iron overmelt troughs are provided and conveniently located, eliminating the dangerous practice of pouring surplus metal on the floor for some innocent one to walk into.

"It is our custom to maintain straight aisles and keep all gangways clean. No curbs or rails are allowed above floor level.

Crane ladles are of the geared tilting type. One of our larger foundries has recently changed most of the old worm gears for the improved helical-worm gearing, which insures the ladle remaining in a given position, and is very easily tilted for pouring. It might be well at this point to mention a common dangerous practice of carrying the crane ladle containing molten metal about the shop in other than a vertical position.

General Observations

"A SUGGESTION recently advanced which has much merit is that in designing new foundries and remodeling old ones consideration be given to providing safety galleries back of crane cages to permit of easy exit in case of a bad spill or excessive heat from floor; also that all crane cages should be well protected from a spill of iron or steel. It often happens that stoppers become frozen in the nozzle. A variety of methods are employed to raise the stopper out of the nozzle, most of which are attended with more or less danger from molten metal. I am of the opinion that some safer method than we yet know of could be provided. Such a contribution to the steel industry would be welcomed.

"Good flask equipment with proper flask joints should be maintained. The majority of our flasks are metal, and very little trouble is experienced from run-outs. Most foundries do have some wooden flasks. One of our foundries provides a one-inch thick strip on the joint face of both cope and drag, and replaces when needed at little expense, insuring greater safety.

"Slag spouts on cupolas should be equipped with suitable shields to prevent blowing sparks and slag on to operators or passers-by.

"Air pipe from the blowers to cupolas should be equipped with suitable back pressure safety gates so that there is no danger of carrying flame and fire into the blowers, causing explosions of gases."

Carnegie Trophies Exhibited

SAFETY trophies of the Carnegie Steel Co. formed one of the interesting exhibits in connection with the annual congress of the National Safety Council held in Cleveland last week. These included trophies awarded in 1922 to 1924, the 1925 trophy now being competed for and the trophy for 1926 which has just come from the hands of the sculptor. This group of bronze statues symbolical of safety work was very artistically arranged in the lobby of the Hotel Cleveland, as shown in the illustration on page 954.

The statue shown in the center is the 1926 trophy. This has as its base an ancient galley ship that was chosen as a symbol because the galley was moved by direct human effort. A tall, handsome youth stands on the deck holding a rudder bearing the words, "Safety First." In his right hand he holds aloft a light. In the shallow water on either side of the home-coming ship are two sturdy running figures. They are Labor and Industry pushing the ship into the landing.

In connection with the exhibit the Carnegie Steel Co. distributed a booklet describing the trophies, and expressing its interest in safety work in the following paragraph:

"In displaying these safety trophies, the Carnegie Steel Co. gives expression to the hope that the spirit of competition in safety work in industrial plants may be found by others an inspiration to new efforts in the reduction of accidents, and that employees may with renewed interest, find a zest in entering into the effort of trying to excel in that noble spirit of who can best work and who can best serve. Safety, ranks with pro-

duction in Carnegie Steel Co. plants, and a highly efficient organization is maintained for the study of the subject. This organization through general and sub-committees reaches out into every department of eleven manufacturing plants, an extensive railroad system, and a great tonnage carrying river transportation system. Every employee is made to feel that he is a vital part in a campaign that interests him, and soon he is imparting that spirit to his neighbor."

Turbine of 115,000 Hp. and Condenser Ordered by Brooklyn Edison Co.

The largest steam condenser ever conceived by engineers, to be operated in conjunction with a 115,000-hp. generating unit, larger than any other single unit constructed in the history of the world, has been ordered by the Brooklyn Edison Co., according to an announcement issued at the South Philadelphia Works of the Westinghouse Electric & Mfg. Co. The condenser and turbine equipment will be made at the South Philadelphia plant, while the electric generator will be delivered from the East Pittsburgh works.

The condenser ordered for use with this new unit will have 80,000 sq. ft. of cooling surface, or 10,000 sq. ft. more than the giant condenser completed a few weeks ago by the South Philadelphia works for the new Port Richmond station of the Philadelphia Electric Co. When completed the condenser will contain 12,920 tubes, each 24 ft. in length, or equivalent to a continued tube length of 58½ miles.

Machinery Markets and News of the Works

BUSINESS GAINS STEADILY

Machine Tool Orders in Best Volume Since Spring of 1923

Large Contracts for Tools for Russia Placed— Milwaukee Company Buys 22 Drilling Machines

OFFICIAL reports at the twenty-fourth annual convention of the National Machine Tool Builders' Association at Washington disclosed that machine tool buying is in larger volume than at any time since the spring of 1923, which was one of the peak periods since the war.

Among the large orders of the past week were several from the Amtorg Trading Corporation, New York, the machinery and metals buying representative

of the Soviet Republic. These orders, aggregating about \$200,000 in value, covered principally lathes, grinding machines and milling machines, and were distributed among five companies.

The A. O. Smith Corporation, Milwaukee, has bought 22 drilling machines and is inquiring for several large boring mills. The Nash Motors Co., Racine, Wis., purchased several special drilling machines and a shaper and its subsidiary plant, which is building Ajax automobiles, is to be enlarged to meet increased demand for its product. The Chrysler Motor Corporation, Detroit, bought seven lathes from a Cincinnati builder. There has been a great deal of miscellaneous buying by industrial companies in diversified lines of manufacturing.

Railroad buying has been of moderate proportions, but a number of roads, including the Nickel Plate and the Kentucky & Indiana Terminal Railroad, have each bought service tools.

New York

NEW YORK, Oct. 6.

INQUIRY is slightly less, but there is a good volume of pending business that promises continuation of recent buying. The outstanding feature of the week was the closing of orders by the Amtorg Trading Co., 165 Broadway, New York, for more than \$200,000 worth of tools, including grinding machines, lathes and milling machines. These purchases are understood to have been distributed among five or more prominent builders. Further orders, including one for 35 gear cutting machines, are reported still pending.

Railroad purchasing continues moderate with the list of the Brooklyn-Manhattan Transit Corporation, which includes drill presses, radial drills, planers, engine lathes, carwheel lathes, shapers and horizontal boring mills, expected to be closed in a few days. Recent purchases by railroads include a combination journal turning and axle lathe, 48-in. carwheel borer and 6-ft. radial drill by the Central Railroad of New Jersey.

A noteworthy purchase of large gears was recently made by the Chile Exploration Co., New York, which awarded 22 vanadium steel, herringbone gears of 161-in. diameter and 18-in. face with pinions, totaling more than \$60,000, and 22 large motors, the equipment to be used on a large Marcy mill in Chile. Further purchases involving a still larger expenditure are contemplated.

The Mohegan Tube Co., 302-402 Scott Avenue, Brooklyn, manufacturer of steel and metal tubing, has awarded a general contract to the Commonwealth Engineering Co., 103 Park Avenue, New York, for a five-story addition, 90 x 281 ft.

The Board of Education, Park Avenue and Fifty-ninth Street, New York, is said to be planning the installation of manual training equipment in the proposed four-story high school to be erected on the block bounded by Fordham Road, 189th Street, Bathgate and Washington Avenues, to cost \$2,670,000. William H. Gompert is architect.

Robert Teichman, 66 Beaver Street, New York, architect, has plans for a six-story automobile service, repair and garage building, 87 x 100 ft., at 136-42 West Ninety-ninth Street, to cost \$80,000.

The Sun Oil Co., Finance Building, Philadelphia, has plans for a two-story storage and distributing plant at Long Island City, with service, repair and garage building for company motor trucks, estimated to cost \$200,000 with equipment.

Fire, Sept. 22, destroyed a portion of the plant, including machinery and fixtures, of Loeb, Allmayer & Redlich, Inc., 375-77 West Broadway, New York, manufacturer of metal edge boxes, etc. An official estimate of loss has not been announced. It is planned to rebuild.

Benjamin H. Winston, 6 East Forty-sixth Street, New York, architect, has plans for a two-story automobile service, repair and garage building, 91 x 100 ft., at Elmhurst, L. I., to cost \$80,000, for which bids will soon be asked on a general contract.

The Board of Education, Tuckahoe, N. Y., plans the installation of manual training equipment in its proposed three-story high school to cost \$600,000, for which preliminary plans are being drawn by Harry Kerrigan and Patrick J. Murray, 247 Park Avenue, New York, architects.

The Logan Construction Co., 15 Park Row, New York, is said to be in the market for a 10-ton electric traveling crane.

The Sherman Radio Mfg. Corporation, New York, has leased a portion of the building at 114 East Thirteenth Street, for a new plant.

The American Shade Roller Co., 151 Thirty-third Street, Brooklyn, has completed plans for a four-story factory, 81 x 120 ft., to cost \$55,000. J. S. Kennedy, 157 Remsen Street, is architect.

The Canton Steel Ceiling Co., 497 West Street, New York, has acquired one and five-story buildings adjoining, 70 x 100 ft., for extensions.

The L. A. Dreyfus Co., Edgewater, Rosebank, Staten Island, manufacturer of rubber specialties, has plans for an eight-story addition, 45 x 200 ft., to cost \$200,000. William Higginson, 15 Park Row, New York, is architect.

Officials of the Tebo Yacht Basin Co., foot of Twenty-fourth Street, Brooklyn, and affiliated organizations have organized the Todd Dry Dock, Engineering & Repair Corporation, with 10,000 shares of stock capitalization, to take over and consolidate the different interests, including the Tebo company, Clinton Dry Docks, Inc., foot of Clinton Street, and the Todd Oil Burner & Engineering Co., 742 East Twelfth Street, New York. It is proposed to develop manufacture of fuel oil burners.

The New York Transfer Co., 263 Fifth Avenue, New York, has awarded a general contract to Young & French, 103 Park Avenue, for a four-story automobile service, garage and repair building, 100 x 150 ft., for company motor trucks and cars, to cost \$450,000 with equipment. Dennison & Hiron, 200 Lexington Avenue, are architects.

The De Mattia Foundry & Machine Co., 6 Troast Place, Clifton, N. J., has awarded contract to the J. J. O'Leary Co., 125 Prospect Street, Passaic, N. J., for a one-story foundry addition, 70 x 80 ft.

The Board of Education, Secaucus, N. J., plans the installation of manual training equipment in its proposed junior high school to cost \$200,000, for which bids will be asked soon on a general contract. William Mayer, 711 Bergenline Avenue, West New York, N. J., is architect.

The Independent Cork Co., Jefferson, near Malapardis, N. J., has plans for a one-story addition, 60 x 250 ft., to cost \$50,000 with equipment.

Krauter & Co., 583 Eighteenth Avenue, Newark, manufacturers of tools, have formed the Kroydon Co., a subsidiary, to manufacture golf clubs, including cast steel ends, etc. A new plant, 60 x 500 ft., at Hilton, N. J., will be occupied by the company, the site being owned by the parent organization.

The D. H. Ott Co., Jackson's Lane, Little Falls, N. J., manufacturer of rubber goods, has awarded a general contract to the Charles Tangora Co., 175 Totowa Avenue, Paterson, N. J., for a two-story addition, 42 x 85 ft., to cost \$75,000 with equipment. E. R. Coe, Romaine Building, Paterson, is architect.

The Mack International Motor Truck Corporation, 25 Broadway, New York, has taken out a permit to build a one-story factory branch, service and repair building at 1081-5 West Side Avenue, Jersey City, N. J., to cost \$226,000 with equipment.

The Co-Service Oil Co., 196 Halsey Street, Newark, will erect a new storage and distributing plant at Jacobus and Pennsylvania Avenues, Kearny, N. J., including machine and repair department and steam power house. Kleeman & Lansing, 964 Broad Street, are architects. Alexander Smith is president.

The Diamant Tool & Mfg. Co., Inc., Runyon Street and Badger Avenue, Newark, has leased a portion of the four-story building at 401-7 Mulberry Street, for a new plant and will remove to this location. Equipment will be provided for increased output.

The Mexican Petroleum Corporation, 120 Broadway, New York, is closing negotiations for the purchase of the north section of the Groton Iron Works, Groton, Conn., and plans the construction of a new oil storage and distributing plant to cost \$125,000 with equipment.

New England

Boston, Oct. 5.

MORE machine tools were sold in this market the past week than in any similar period in several months. Trade was active, but business was confined very largely to used machines. In addition, there are also more live inquiries. Transactions however, involve single machines, but cover a wide variety, including milling machines, drilling machines, presses, lathes, planers, shapers, grinding machines, automatic screw machines, boring mills, etc. Buyers have come from all parts of New England, but in most instances represent small shops. Some machinery was sold here last week to New York State shops. The largest individual purchase was a 6-ft. radial drill, a 32-in. shaper, a 100-in. boring mill and a flanging machine by the New York, New Haven & Hartford Railroad. Two of the largest New England plants have given verbal orders for equipment. The school department, Boston, is in the market for welding and cutting equipment for the trade school on Parker Street, Roxbury district, and for sheet metal-working machinery for the Mechanics Art high school.

Small tools are moderately active. Sales for September showed a falling off from August, but were somewhat larger than those for September, 1924.

Bids closed today for a 4200-gal. turbine driven pump, a 1400-gal. motor-driven pump and a 175-hp. water tube boiler with soot blower, required by the city of Lawrence, Mass.

The Hooker Mfg. Co., St. Johnsbury, Vt., has sold its foundry to the St. Johnsbury Gray Iron Foundry, a new organization.

The Niles Machine Co., Lebanon, N. H., has taken over the Lebanon Machine Co. and will operate the plant as a jobbing foundry, specializing in road signs. Arthur F. Niles is president of the Niles company, and Caleb H. Niles, vice-president and treasurer.

The Baldwin Chain & Mfg. Co., Worcester, Mass., has purchased for \$15,000 about 158,000 sq. ft. on Evers Street,

Auburn, Mass., on which it is proposed to erect a plant at some future date. About a year ago the company announced that it would move from Worcester.

The Page Needle Co., Chicopee Falls, Mass., the Currier Needle Co. and the Torrington Co. have been consolidated and will be centralized in Manchester, N. H., in the plant formerly occupied by the Eureka Shoe Co.

Edward D. Leeman, 1027 Fellsway, Medford, Mass., will erect a 60 x 90 ft. light rolling mill on Gibson Street.

The Hunt-Spiller Mfg. Corporation, 383 Dorchester Avenue, South Boston, contemplates the erection of a one-story, 40 x 85 ft., power house. Plans are private.

Plans will soon be ready for a three-story, 32 x 100 ft. factory for the Towle Mfg. Co., 260 Merrimac Street, Newburyport, Mass., silversmiths, for which presses will be required. George Perkins, 200 Devonshire Street, Boston, is the engineer.

The Government is completing plans for new hangars, officers' quarters, etc., on Brainard Field, Hartford, Conn. Plans include a one-story machine shop to cost \$22,000. Equipment will cost \$15,000 additional.

The Aberthaw Construction Co. has applied for permission to erect a six-story, 50 x 160 ft., concrete plant at 72 Orange Street, New Britain, Conn., for the Fafnir Bearing Co., to cost approximately \$120,000.

The Remington Typewriter Co., Railroad Avenue, Bridgeport, Conn., with headquarters at 374 Broadway, New York, has awarded a contract to the Stewart Engineering Co., 17 East Forty-second Street, New York, for a three-story addition to its Bridgeport plant, 40 x 60 ft., to cost \$50,000.

The Central Maine Power Co., Augusta, Me., has plans for a new hydroelectric power development on the Androscoggin River, near Lewiston, Me., for an initial capacity of 27,000 hp., estimated to cost \$350,000. The company is a unit in the New England Public Service Co., recently formed by officials of the Middle West Utilities Co., Chicago, to take over and consolidate a number of New England electric utilities. This parent organization has arranged for a sale of preferred stock to total \$7,840,000, a portion of the proceeds to be used for power plant development and extensions. Martin J. Insull is vice-chairman of the board.

The Hoague-Sprague Corporation, Lynn, Mass., manufacturer of paper boxes and containers, recently acquired by the United Shoe Machinery Co., Boston, is arranging for the lease of a factory on Broad Street and will remodel for an addition.

The New England Power Co., Worcester, Mass., is completing plans for a hydroelectric power development on the Deerfield River, near Readsboro, Vt., with initial plant to be equipped for a capacity of 9000 kw., to cost about \$300,000 with transmission lines.

The Underhill Brothers Tool Co., Cummings Street, Somerville, Mass., has plans for rebuilding the portion of its plant lately destroyed by fire, for which a general contract has been let to the C. H. Holmes Construction Co., 67 Bonair Street.

Philadelphia

PHILADELPHIA, Oct. 5.

THE Peerless Spring Mfg. Co., Philadelphia, has taken title to the factory at 2628-44 Martha Street, 110 x 135 ft., for a new plant to manufacture steel springs.

The Philadelphia Grain Elevator Co., Philadelphia, a subsidiary of the Reading Railway Co., Reading Terminal, has awarded a general contract to the M. A. Long Co., 10 Guilford Avenue, Baltimore, for its proposed elevator at Port Richmond. A machinery building will be provided with the installation of automatic grain unloading equipment, grain cleaning and separating machinery, grain dryers, etc., with six continuous belt conveyors, car unloaders with capacity for handling 20,000 bu. per hr. each, and other automatic machinery. It will cost \$4,000,000. Samuel T. Wagner is chief engineer.

The Philadelphia Quartz Co., 121 South Third Street, Philadelphia, has concluded negotiations for land at St. Louis, for the construction of a new branch mill, to cost \$250,000 with machinery.

In connection with its proposed branch plant at Detroit, the Edward G. Budd Mfg. Co., Twenty-fifth Street and Huntington Park Avenue, Philadelphia, manufacturer of all-steel automobile bodies, is disposing of a preferred stock issue of \$2,500,000, a portion of the fund to be used for this and other expansion. A subsidiary has been formed under the name of the Edward G. Budd Mfg. Realty Co., to purchase 11 acres at Detroit, and for future property purchases. It will dispose of a bond issue of \$1,500,000 at once, for

The Crane Market

THE volume of new inquiry for both electric overhead and locomotive cranes is small and pending business is slow to close. The lists of the Chile Exploration Co. for five cranes and the Andes Copper Mining Co. for 15 cranes are expected to close at the same time. With the exception of these large lists, most of the current inquiry is for single cranes, generally of small capacities. The Stanley Works, New Britain, Conn., has asked for quotations on two used 10-ton, 58 to 60-ft. span electric overhead cranes, with a.c. motors.

Among recent purchases are:

Joseph T. Ryerson & Son, 30 Church Street, New York, a 5-ton, 35-ft. span, 2-motor overhead crane and a 3-ton, 30-ft. span hand power crane for a client on Long Island, from the Chisholm & Moore Mfg. Co.

Holyoke Water Power Co., Holyoke, Mass., a 40-ton, 1-motor, overhead crane from the Whiting Corporation.

Como Power Co., Como, Tex., a 75-ton, 4-motor, overhead crane from the Northern Engineering Works.

Public Service Production Co., Newark, N. J., eight 3-ton, eight 4-ton and six 6-ton hand power trolley hoists from the Wright Mfg. Co.

Florence Pipe Foundry & Machine Co., Florence, N. J., a 10-ton, 60-ft. span and three 5-ton, 42-ft. span electric cranes, reported purchased from a Northwestern builder.

Elyria Foundry Co., Elyria, Ohio, a 10-ton electric traveling crane from the Harnischfeger Corporation.

Illinois Central Railroad, a 15-ton pillar crane for its Springfield, Ill., shops, from the Whiting Corporation.

Prescott Co., Menominee, Mich., a 5-ton, 3-motor overhead crane from the Harnischfeger Corporation.

Beckwith Iron Works, 544 West Seventy-ninth Street, Chicago, a 10-ton, 80-ft. span, 5-motor crane, equipped with two 5-ton trolleys, from the Whiting Corporation.

the Detroit project and general financing. Edward G. Budd is president of both companies.

The Western Electric Co., 1601 Glenwood Avenue, Philadelphia, has disposed of its branch factory at Eleventh and York Streets, used for the manufacture of telephone apparatus and kindred equipment, to the Philadelphia School District for \$225,000. It is said that the present plant will be removed later to a new location.

The Studebaker Sales Co., 216 North Broad Street, Philadelphia, local representative for the Studebaker automobile, has leased the three-story building at 304 North Broad Street and 1409-11 Vine Street, for a new service, repair and sales building.

The Board of Education, City Hall, Philadelphia, plans the installation of manual training equipment in its proposed senior high school at Seventeenth and Luzerne Streets, to cost \$1,660,000, for which foundations will soon be laid.

Fire, Sept. 25, destroyed a portion of the grinding and distributing plant of the Trenton Flint & Spar Co., New York Avenue, Trenton, N. J., including steam power house, with loss reported at \$250,000 including machinery. It is planned to rebuild.

A new power plant will be built by the Campbell Soup Co., Camden, N. J., in connection with a group of new buildings to cost \$2,000,000. The work will include a storage and distributing plant, equipped with elevating, conveying and other handling machinery.

The Permutit Co., 440 Fourth Avenue, New York, manufacturer of water-softening and conditioning equipment, has work under way on a new plant at Birmingham, near Burlington, N. J.

The Coplay Cement Mfg. Co., Coplay, Pa., has work under way on improvements at its mill, including the installation of an electric traveling crane for clinker handling.

Edward W. Peters, Danville, Pa., machinery dealer, has inquiries out for a platform scale for motor trucks, with capacity of about 16 tons.

The Coleraine Colliery Co., Hazleton, Pa., will soon begin the construction of a new coal washery at its Coleraine mine, to cost close to \$90,000 with machinery.

The sale of the plant and property of the Harrisburg Foundry & Machine Works, Harrisburg, Pa., scheduled for Sept. 30, has been deferred, the highest tender reaching \$200,000. Howard M. Bingaman is trustee in bankruptcy.

South Atlantic States

BALTIMORE, Oct. 5.

BIDS are being asked by the purchasing agent, District Government, District Building, Washington, until Oct. 15, for one gasoline engine-driven portable air compressor unit.

The Empire Iron Works, Inc., Baltimore, has been organized with a capital of \$100,000 to take over the company of the same name with plant at 1022 Granby Street. Expansion plans are under consideration. The incorporators of the new company are Jacob Myers and Harry E. Buckner.

The Standard Soapstone Corporation, Arrington, Va., has inquiries out for electric power equipment, including two 500-kw. turbo-generators, 2300 volts, three-phase, 60 cycles, complete with condensing equipment, etc. C. Reeves is vice-president, in charge.

The Davis Foundry & Machine Works, Rome, Ga., is planning to purchase a steam engine, 300 to 400-hp. capacity, with auxiliary equipment. Inquiries are out.

The Carolina Power Co., Sanford, N. C., has preliminary plans for a new hydroelectric power station with initial output of 40,000 hp., to cost \$500,000 with transmission lines.

Fire, Sept. 23, destroyed a portion of the two-story, 52 x 152 ft., roofing and tinning plant of Schwartz & Phaul, Plum Street, Macon, Ga., with loss estimated at \$30,000. It is proposed to rebuild.

The American Oil Co., American Building, Baltimore, is arranging a new storage and distributing plant at Fredericksburg, Va., to cost \$50,000. It will also proceed with the installation of a similar plant at Portsmouth, Va., to cost close to a like figure.

F. H. Potter, 1241 West Forty-first Street, Norfolk, Va., is planning to purchase a quantity of oil burners and accessory equipment and is desirous of getting in touch with manufacturers.

Lewter H. Hobbs, Inc., P. O. Box 483, Norfolk, Va., machinery dealer, has inquiries out for an inclined power press.

The W. H. Anderson Co., Greensboro, N. C., will soon begin foundations for its proposed two-story cold storage and refrigerating plant, 100 x 150 ft., to cost \$200,000 with equipment.

The General Purchasing Officer, Panama Canal, Washington, is asking bids until Oct. 22 for a water pump, gasoline engines, boilers, cable, wire, fuses, barrel bolts, grindstones and other apparatus, Panama Circular 1700.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for ten sets of 36-in. diameter steel wheels and axles; one 250-hp. stationary engine, right-hand, side crank, slide valve; one portable saw mill with center crank engine, boiler and accessories, about 20,000-hp. capacity; one steel water tower for tank about 80 ft. high, with platform, ladder to top, hand-rail, etc., and one steel boom, 45 to 60 ft. long.

Plans are under way for the complete electrification of the Callaway group of textile mills, replacing all steam-operated apparatus, with cost close to \$450,000. The plants include the Unity Cotton Mills, Unity Spinning Mill, Elm City Cotton Mills, Hillside Cotton Mills and the Valley Mills, all of La Grange, Ga., and the Manchester Cotton Mills, Manchester, Ga.

The R. J. Reynolds Tobacco Co., Winston-Salem, N. C., has plans for a new steam-operated electric power house at its local factories to cost \$300,000 with equipment. J. E. Sirrine & Co., Greenville, S. C., are engineers.

The Board of Education, High Point, N. C., plans the installation of manual training equipment in its proposed new high school to cost \$500,000, for which Harry Barton, Jefferson Building, Greensboro, N. C., is architect.

The City Council, York, S. C., is said to be planning the installation of pumping machinery in connection with proposed extensions in the waterworks and sewage system, to cost \$150,000.

The Commanding Officer, Aberdeen Proving Grounds, Md., is asking bids until Oct. 30 for valves, hacksaw blades, bolts, cutters, wire and other mechanical equipment, circular 18.

The Taylor-Parker Co., Commercial Place and Water Street, Norfolk, Va., has inquiries out for one 200-hp. automatic engine, about 18 x 24 in., right-hand.

The Salem Steam Laundry, Inc., Salem, Va., is in the market for oil burning equipment for boilers.

The Virginia Railway & Power Co., Richmond, Va., recently acquired by Stone & Webster, Inc., 147 Milk Street, Boston, engineer, and affiliated interests, is reported to be considering plans for extensions and betterments in its hydroelectric generating plants on the Rappahannock, James and Appomattox Rivers, to cost \$5,000,000. The company recently completed a transmission line from Suffolk, Va., to Roanoke Rapids, N. C., costing \$900,000, in connection with the power station expansion.

Pittsburgh

PITTSBURGH, Oct. 5.

SINGLE tool orders still are being secured in this market, and occasionally some run fairly high in monetary value, but cases are rare where a buyer takes more than one or two tools. The Valley Mould & Iron Corporation, Sharpsville, Pa., which is building a new plant in South Chicago, will buy little new equipment. This company had plants in Pittsburgh and Josephine, Pa., from which it will draw all usable equipment and cranes for its new works. Six or seven cranes from these plants will be rebuilt and changed to the requirements of the new plant by the Morgan Engineering Co.

A bond issue of \$500,000 is being sold by the United Electric Light Co., Wilmerding, Pa., the majority of the proceeds to be used for a new steam-operated electric power plant on the Monongahela River, near Braddock, Pa. Day & Zimmerman, Inc., Sixteenth and Walnut Streets, Philadelphia, is engineer.

The Board of Education, Fulton Building, Pittsburgh, is considering the installation of manual training equipment in its proposed junior high school on Center Avenue to cost \$1,200,000, for which bids will be asked soon on a general contract. J. T. Steen & Sons, Vandergrift Building, are architects.

The Chesapeake & Ohio Railroad Co., Richmond, Va., will proceed with the construction of a one-story boiler shop, 140 x 400 ft., at its car and locomotive works at Huntington, W. Va., to cost about \$350,000 with equipment. I. W. Johns is chief engineer.

The Charles Boldt Glass Co., Eighth Avenue, Huntington, W. Va., is arranging to rebuild the portion of its plant destroyed by fire a few months ago, with loss of about \$350,000 including equipment. Initial work will consist of a two-story building. A box-manufacturing plant will also be built. Headquarters are at Cincinnati.

Effective Oct. 1, the Walworth Co., Boston, manufacturer of valves, fittings, tools, etc., has taken over the plant of the Kelly & Jones Co., Greensburg, Pa., manufacturer of similar products, recently acquired. Production will be continued as heretofore under the new management and expansion in output is planned. The Walworth Co., just organized, will succeed to the plant and business of the Walworth Mfg. Co. Bonds for \$10,000,000 are being sold, the proceeds to be used for the Kelly & Jones acquisition and other expansion. Howard Coonley is president.

The Kittanning Plate Glass Co., 509 People's Bank Building, Pittsburgh, recently organized with a capital of \$10,000,000, has secured options on 60 acres on the Allegheny River at Kittanning, Pa., and plans the construction of new works, consisting of four units, estimated to cost \$2,000,000. G. A. Tennis is president, in charge.

The Tinder Motor Car Co., McFarland Street, Charleston, W. Va., L. A. Tinder, head, is planning a two and three-story service, repair and garage building, to cost about \$75,000 with equipment.

The Board of Education, Midland, Pa., plans the installation of manual training equipment in its proposed one and two-story high school to cost \$300,000, for which bids are being asked on a general contract until Oct. 12. Former bids received were rejected. W. G. Eckles & Co., Lawrence Savings & Trust Building, New Castle, Pa., are architects.

W. P. West, Hartstown, Pa., operating the State Road Garage, is in the market for a cylinder reboring machine, air compressor, drill press, small lathe and other equipment to replace that destroyed by fire on Sept. 27.

The Rutter Lumber Co., Turtle Creek, Pa., is in the market for electrical power equipment, transmission, conveying and other machinery in connection with rebuilding its lumber mill destroyed by fire Sept. 28 with a loss of \$100,000.

The Finney Mfg. Co., Oil City, Pa., manufacturer of tacks, is preparing to double the capacity of its plant about Nov. 1. Additional equipment will be purchased. G. R. Finney is president and general manager.

Buffalo

BUFFALO, Oct. 5.

CONTRACT has been let by the Standard Oil Co. of New York, 26 Broadway, New York, to the John W. Cowper Co., Fidelity Building, Buffalo, for a five-story automobile service, repair and garage, 115 x 150 ft., at Babcock and Elk Streets, Buffalo, for company trucks and cars, to cost \$200,000.

The Seaman Container Co., Franklin Avenue, Olean, N. Y., with headquarters at Chicago, has purchased the local plant and business of the E. B. Van Atta Co., manufacturer of hydraulic presses, pumps, etc. The new owner is said to be planning to continue production, with general expansion in the business.

The Natural Voice Talking Machine Co., Oneida, N. Y., manufacturer of talking machines, radio cabinets, etc., is said to be considering the construction of a plant at Los Gatos, Fla., a new industrial development near Jacksonville.

The Curtiss Aeroplane & Motor Co., 74 Kall Street, Buffalo, has secured an order from the Government for 26 pursuit planes and 60 aeroplane motors, totaling about \$1,500,000, and contemplates developing its local plant to maximum capacity.

Martin H. Jones, Buffalo, operating an electrical supply and automobile repair works at 206 Forest Avenue, is contemplating the erection of a one-story addition, for which plans will soon be drawn.

The Mount Morris Valve Corporation, Mount Morris, N. Y., recently organized by Frank VanDorn and associates with capital of \$150,000, will establish a local factory for the manufacture of valves.

The Northern Oil Fuel Corporation, Watertown, N. Y., is arranging for the erection of a storage plant at Carthage, N. Y., for which electrical pumping machinery and other equipment will be required.

The Rane Tool Co., 59 Hopkins Avenue, Jamestown, N. Y., designer and manufacturer of fine tools, gages and special machinery, is completing a one-story brick and steel factory, 30 x 100 ft., for which considerable equipment will be required. Herbert J. Randall is general manager.

The Foote Brothers Gear & Machine Co., Chicago, has purchased from the Farrel Foundry & Machine Co., Buffalo, a new Sykes gear generating machine. The Foote company will place on the market a new series of reduction units, equipped with the Sykes generated, continuous tooth, herringbone gears, and will also publish a list of Sykes herringbone gears, giving standard sizes and prices.

Detroit

DETROIT, Oct. 5.

CONTRACT has been awarded by the Ford Motor Co., Detroit, to the W. E. Wood Co., local, for a three-story addition, 68 x 300 ft., at the Lincoln motor plant, Livernois and Warren Avenues, including improvements in the present buildings, to cost \$600,000. Albert Kahn, Inc., Marquette Building, is architect.

The Trunk Rack Co., Fostoria, Ohio, manufacturer of steel racks for automobile trunks, has completed the removal of its main plant to Ypsilanti, Mich., where a building was recently leased. It is expected to increase the output at the new location. F. J. Bradley heads the company.

The Universal Cooler Co., Detroit, has acquired about 10 acres on Dix Avenue, fronting on the line of the Pennsylvania Railroad, and plans the early erection of a new factory to manufacture mechanical refrigerators.

The Murray Body Co., Russell and Aberle Streets, Detroit, manufacturer of automobile bodies, is said to be planning an addition to cost \$90,000 with machinery.

The Morency-Van Buren Mfg. Co., Sturgis, Mich., has awarded a general contract to the Boyen Construction Co., Hagerman-Freeland Building, for a one-story addition to its brass foundry, 50 x 76 ft., to cost \$32,000. A. F. Morency is one of the heads of the company.

The Bohn Aluminum & Brass Corporation, Detroit, will proceed with an addition at its local plant to cost \$35,000 with equipment.

The Hudson Motor Car Co., 12601 Jefferson Avenue, Detroit, will soon ask bids for a two-story and basement power house, 65 x 70 ft., for which plans are being drawn by Albert Kahn, Inc., Marquette Building, architect.

The Board of Education, Jackson, Mich., plans the installation of manual training equipment in its proposed three-story and basement senior high school on Wildwood Avenue, estimated to cost \$1,250,000, for which bids will be asked on general contract about Oct. 10. Childs & Smith, 720 North Michigan Avenue, Chicago, are architects; Leonard H. Field, Jr., People's National Bank Building, Jackson, is associate architect.

New interests have acquired a substantial interest in the Rickenbacker Motor Co., Detroit, and plans are under way for expansion in automobile manufacture, including the proposed acquisition of an automobile body plant to handle requirements for the Rickenbacker car.

Plans have been completed for a reorganization of the Muskegon Motor Specialties Co., Muskegon, Mich., manufacturer of cam shafts and kindred automobile products, and it will be removed from the control of the creditors' committee recently in charge. The company has disposed of a bond issue of \$125,000, a portion of the proceeds to be used for plant development. Fred L. Flanders is president and treasurer.

The George B. Bright Co., 2615 Twelfth Street, Detroit, engineer, has plans under way for a new cold storage and refrigerating plant, for which the owner's name is temporarily withheld. It is reported to cost close to \$1,000,000 with machinery.

The Lakey Foundry & Machine Co., Muskegon, Mich., will soon begin the installation of additional equipment, including conveying apparatus, etc., to cost \$50,000.

Chicago

CHICAGO, Oct. 5.

MACHINE tool dealers in this district report a satisfactory volume of sales for the month of September; in fact, orders for medium and small sized tools probably exceeded those for any other month so far this year. Deliveries were extended slightly during September, this condition being explained not by the fact that builders are operating at capacity, but rather because they prefer to continue to operate with a somewhat curtailed force until satisfied that the present rate of buying is not merely temporary.

Inquiries are being received in fair volume, and some dealers are well pleased with the outlook for the next 60 days. Lathes and drilling machines appear to be the most active, although the demand has been fairly general for all types of machine tools.

The A. O. Smith Corporation, Milwaukee, Wis., has bought 22 drilling machines, included among which were several radial drills. This company is inquiring for several large boring mills. The Nash Motors Co. bought several special drills and a 32-in. shaper for its Kenosha plant and is making inquiry for tools for its Milwaukee works. It is reported that the Nash plant at Racine, Wis., will be enlarged to meet the demand for the new Ajax car, on which the total production has reached 5000 for the four months since the car was first placed on the market. The Hannum Mfg. Co., Milwaukee, purchased four Helm centerless grinders, and the National Lock Co., Rockford, Ill., bought a 16-in. shaper. The Aluminum Goods Co., Manitowoc, Wis., placed orders for several lathes, two shapers, a planer and a number of presses. The Remy Electric Co., Anderson, Ind., has been an active buyer and purchased three tool-room lathes, five milling machines and is now making inquiry for several shapers. The Illinois Steel Co. and the Youngstown Sheet & Tube Co. lists are again active, and the trade anticipates that some of the tools on each list will be placed this week. A Western railroad bought a number of miscellaneous tools, and formal orders are now on file with manufacturers for the tools recently placed by the Chicago, Milwaukee & St. Paul.

Tobin-Picker & Co., 2707 Belmont Avenue, Chicago, will build a one-story addition, 50 x 125 ft., to its factory. A. M. Heda, 72 West Washington Street, is architect.

H. N. Samuel, 2621 North Ashland Avenue, Chicago, will build a one-story factory, 75 x 108 ft., to cost \$20,000. The general contractor is E. C. Ecker, 110 South Dearborn Street.

The Water Department, Omaha, Neb., will soon ask bids for new pumping equipment to develop a capacity of 20,000,000 gal. per day.

The By-Products Coke Corporation, 11,233 Torrence

Avenue, Chicago, will erect a coke handling equipment building, estimated to cost \$120,000.

J. J. Harrington, 38 South Dearborn Street, Chicago, will build a one-story factory, 105 x 200 ft., at West Fullerton Avenue and Lyndale Street, estimated to cost \$50,000.

The Great Lakes Forge Co., 14 East Jackson Boulevard, Chicago, has awarded a general contract to the Hallenberg Co., 11 South La Salle Street, for a one-story addition to cost \$35,000. George C. Rodgson is president and treasurer.

The Iowa Railway & Light Corporation, Cedar Rapids, Iowa, is disposing of a bond issue of \$4,000,000, a portion of the proceeds to be used for extensions and betterments in power plants and system.

The Auto Specialties Co., 219-23 West Seventh Street, Sioux City, Iowa, has awarded a general contract to Coomer & Small, U. B. Building, for a one-story addition, 100 x 150 ft., to cost \$30,000 with equipment.

The Kroehler Mfg. Co., 14 East Jackson Boulevard, Chicago, manufacturer of davenport beds and kindred furniture, has awarded a general contract to Edward Taron, East Court Street, Kankakee, Ill., for a one-story and basement addition to its plant at Bradley, Ill., 80 x 160 ft., to cost \$50,000, with equipment.

The Nuckolls Packing Co., Pueblo, Colo., will soon begin work on a new five-story and basement cold storage and refrigerating plant, 52 x 85 ft., to cost \$100,000 with equipment. Henschien & McLaren, 1637 Prairie Avenue, Chicago, are architects. Harvey G. Nuckolls heads the company.

The Northwestern Sash & Door Co., Fergus Falls, Minn., has plans for a new two-story mill to cost \$55,000 with equipment. W. R. Dennis, 121 Mill Street, is architect.

The Roxana Petroleum Corporation, Arcade Building, St. Louis, is reported to be planning for extensions in its oil refinery at Wood River, Ill., where about 160 acres was recently acquired in the vicinity of the present plant. New buildings will be erected, and additional machinery installed. The company is also said to be planning for extensions in its pipe line from the Mid-Continent field to this section. The entire project will cost close to \$4,000,000.

The Gates Rubber Co., 999 South Broadway, Denver, Colo., manufacturer of automobile tires and tubes, will begin the erection of a two-story addition, 50 x 125 ft., to cost about \$100,000 including equipment. Plans are also under advisement for the construction of an additional unit to cost close to \$150,000 with machinery. Charles C. Gates is president.

The Board of Education, City Hall, St. Paul, Minn., is completing plans for an addition to the Hammond Occupational School, to cost about \$110,000 with equipment. Frank X. Tewes, City Hall, is architect.

The Western Clock Co., La Salle, Ill., has awarded a general contract to Jobst & Co., Peoria, Ill., for a five-story and basement addition, 65 x 240 ft., to cost \$300,000 with equipment. A. S. Goodenough is company engineer.

Cleveland

CLEVELAND, Oct. 5.

MACHINE tool orders improved the past week. Considerable business came out in small lots, largely from the automotive field. The Chevrolet Motor Co. bought several machines for the transmission department in its Toledo plant. The Eaton Axle & Spring Co., Cleveland, bought a few machines and will purchase considerable special production equipment for drilling, milling and turning operations in the manufacture of axles. The Nickel Plate Railroad purchased a turret lathe and a 90-in. locomotive axle lathe and is still in the market for a number of tools. Some good orders were placed in the Detroit territory, and more business is pending from automobile companies in Detroit.

The General Tire & Rubber Co., Akron, Ohio, has taken bids for a one-story 40 x 140 ft. factory. William O'Neil is vice-president and general manager.

The Cleveland Metal Stamping Co., 3100 Payne Avenue, Cleveland, will take bids shortly for a two-story extension. The George S. Rider Co., Century Building, is the engineer.

The Cleveland Range Co., 519 Huron Road, Cleveland, contemplates the erection of a factory. H. R. Lynn is president.

A foundry, forge shop and machine shop will be provided in a Mansfield, Ohio, senior high school, bids for

which have been taken. John H. Brister, 2 South Main Street, Mansfield, is clerk of the Board of Education.

The Alliance Toy & Specialty Co., Alliance, Ohio, has had plans prepared for a one-story factory for the manufacture of steel and wooden toys.

Manual training equipment will be installed in the two-story and basement high school to be erected at Toronto, Ohio, estimated to cost \$200,000, for which superstructure will soon begin. Peterson & Clark, Steubenville Bank & Trust Building, Steubenville, Ohio, are architects.

The Willys-Overland Co., Toledo, Ohio, is contemplating an extension to a power plant at its local automobile works. Equipment to be purchased includes boilers, stokers, pumping equipment, air compressors and auxiliary apparatus. This work is in connection with an extension program to cost approximately \$2,000,000.

Cincinnati

CINCINNATI, Oct. 5.

LOCAL machine tool manufacturers report that sales in September showed a substantial increase compared with August, and in many cases set a high mark for the year. October has opened with a liberal volume of buying, and pending inquiries are numerous. Automobile makers are the leading source of business, although there has been a perceptible improvement in purchases throughout the general industrial field. Railroads are manifesting little interest.

Production of machine tools in Cincinnati continues to be heavy, and the outlook for the immediate future indicates that operations will be sustained at the present rate throughout October. Machinery dealers have enjoyed a fairly active business the past month, while the sale of small tools has been heavy.

The Louisville & Nashville, which inquired for 10 lathes, a planer and a milling machine, has bought an engine lathe and will not make further purchases for four to six weeks. The Kentucky & Indiana Terminal Railroad Co., Louisville, Ky., bought considerable equipment from the Niles-Bement-Pond Co. Included in the sale were a 90-in. driving wheel lathe, a 48-in. carwheel borer, an 1100-lb. single frame hammer, a 96-in., 600-ton wheel press, a combination journal turning and axle lathe and a 5-ft. radial drill. The Chrysler Motor Corporation purchased seven lathes from a local builder, while the Nash Motor Co. closed for four machines. The Ajax Motor Co. bought two lathes. The Pullman Co., Chicago, placed an order locally for two all-steel press brakes and a gap lathe. It is understood that the Columbia Power Co., Cincinnati, subsidiary of the Columbia Gas & Electric Co., is in the market for a number of machine tools which will be purchased through Sargent & Lundy, consulting engineers, Edison Building, Chicago.

Planer manufacturers are encouraged by the upward trend of sales. Several large machines have been booked by a local company, and it is reported that the Liberty Machine Tool Co. has secured an order for a planer from the Hudson Motor Co. Inquiries for planers are brisk. Lathe builders state that sales are holding up well. The Chicago, Milwaukee & St. Paul bought an extension bed gap lathe and the Argentine navy purchased a gap lathe for the battleship Moreno. A local builder sold a lathe for delivery in Michigan City, Ind. Shaper companies report that business is satisfactory with orders coming from well diversified sources. The John Steptoe Co. booked a 20-in. motor-driven shaper for shipment to Miami, Fla. Drill manufacturers are operating on an extensive scale. One company sold several radial drills to a California railroad, while another builder took an order for a single machine for delivery in Buffalo.

The American Laundry Machinery Co., Cincinnati, has awarded a general contract to the Ferro Concrete Construction Co., Cincinnati, for the erection of a combined office and factory building, two and three stories, as an addition to its plant at Section and Tennessee Avenues, Norwood, Ohio. The cost, including machinery, is estimated at \$400,000.

The Dayton Pump & Mfg. Co., Webster Street and Mad River, Dayton, Ohio, will erect a one-story addition to its present plant.

The Big Four Railroad, Cincinnati, will take bids until Oct. 12 on a continuous or twin span turntable.

The Louisville & Nashville Railroad, Louisville, Ky., will take bids until Oct. 12 on a 90-ft. span turntable.

The Kentucky & Indiana Terminal Railroad, Louisville,

is contemplating extensive improvements during the next few months. Plans include a new office building, a belt line railroad around the southern section of the city and a machine shop, the latter to cost about \$150,000. The company expects to spend more than \$250,000, which does not include the cost of laying new tracks.

The Huber Builders' Material Co., 713-15 Main Street, Cincinnati, has plans for a one-story planing mill and lumber plant in connection with a group of buildings on 3-acre tract recently acquired. All machinery will be electrically-operated. A one-story automobile service and repair shop will also be built. Mechanical handling equipment will be installed in different parts of the plant, which will cost close to \$150,000. The Professional Engineering Co., Traction Building, is engineer. Harry A. Huber is president.

The Mercantile Corporation, Dayton, Ohio, has tentative plans for a steam-operated electric power plant to cost about \$360,000.

The National Metal Products Co., 1200 Charter Street, Chattanooga, Tenn., has acquired the local plant and equipment of the Chattanooga Roofing Co. and will continue operations as a new unit. Tentative plans are under advisement for expansion. C. D. Martin is president and general manager of the purchasing company.

The Sinclair Refining Co., 45 Nassau Street, New York, has work under way on a new storage and distributing plant at Chattanooga, Tenn., to cost about \$75,000 with equipment. Headquarters for this district are at Atlanta, Ga.

The Corley Mfg. Co., Nineteenth and Cowart Streets, Chattanooga, Tenn., manufacturer of sawmill machinery, parts, etc., plans to rebuild the portion of its factory recently destroyed by fire, with loss estimated at \$70,000 including equipment. A. G. Corley is president.

The A. A. Simond Co., Summit Street and Negley Place, Dayton, Ohio, manufacturer of knives and cutlery, has awarded contract to J. C. Gohn, Dayton, for a one-story addition.

Milwaukee

MILWAUKEE, Oct. 5.

WHILE there is no sign of large volume in the machine tool trade, prospects for October business have been made brighter by a steady continuance of the active inquiry that characterized September trade. Last month was one of the best of the year in number of sales, due largely to the activity of many of the larger automotive industries. A few of these are still inquiring actively and expect to buy a considerable aggregate before the end of the year.

The city of Milwaukee has rejected bids opened recently for furnishing a motor-driven crank shaper, a lathe and a universal milling machine, and is asking for new bids, to be opened Oct. 12. The equipment is required for the new municipal service shop now under construction. The total investment will be about \$275,000 and these items of machinery are but a small part of the total to be purchased in the coming six to eight months. Roland E. Stoelting is commissioner of public works.

The Ajax Motors Co., Racine, Wis., a subsidiary of the Nash Motors Co., Kenosha and Milwaukee, is planning to increase its production schedule fully 100 per cent above the original schedule for its first year, and is increasing its purchases of machine tools and other equipment. The Ajax company has been an active buyer for nearly a year and started production May 1. It will not require any new shop construction for the present, having ample capacity in the former Mitchell Motors Co. plant at Racine which will be tooled. D. M. Averill is vice-president and general manager.

The J. W. Hewitt Machine Co., 517 North Commercial Street, Neenah, Wis., has let the general contract to the C. R. Meyer & Sons Construction Co., Oshkosh, Wis., for a machine shop addition, 40 x 75 ft., part two stories and basement. It is to be ready about Dec. 1 and will be used largely as a forge shop, equipment for which will be purchased at once. J. W. Hewitt is president and general manager.

The Lancaster, Wis., Board of Public Works is taking bids for the erection of an addition to the municipal water and light plant, to be equipped with a 120-hp. type Y Fairbanks-Morse oil engine and pumping unit. F. F. Barnett is city clerk.

The Murray Body Corporation, Detroit, Mich., on Oct. 1 assumed the ownership of the automobile body works of the H. & M. Body Corporation at Racine, Wis., and expects to do extensive retooling for the purpose of changing from

passenger car bodies to motor bus and truck equipment. The company originally was owned jointly by the Hupp and Mitchell factories, and recently was sold by the Hupp Motor Car Co. to the Murray company. J. S. O'Rourke, vice-president and assistant general manager of the Murray company, has been placed in charge at Racine.

The Hathaway Buick Co., Oshkosh, Wis., has broken ground for an addition, 50 x 75 ft., to its sales and service building at 287-291 Main Street, and will use the space largely for machine and repair shop purposes, which will require some new equipment.

The Standard Piston Pin Co. and the Nielson Machinery Co., occupying jointly a frame machine shop at Racine, Wis., sustained heavy fire losses on Sept. 28. The building was almost totally destroyed, while much of the machinery was ruined. Plans are being made to lease another building and resume production as quickly as possible.

Gulf States

BIRMINGHAM, Oct. 5.

PLANs have been filed by the American Ice Co., Dallas, Tex., for a new plant at 4111 Ross Street to cost about \$30,000. The company will also make extensions and improvements in its plant at 3305-7 Lemmon Street, to cost approximately \$37,000.

The Calcasieu Sulphate Paper Co., Elizabeth, La., recently organized with a capital of \$1,750,000, has acquired the local mill and equipment of the Calcasieu Mfg. Co., and will remodel for a new plant. Additional equipment will be installed. R. M. Hallowell is president, and S. M. Lee, vice-president.

The Texas & Pacific Railroad Co., Texas & Pacific Building, Dallas, Tex., will proceed with superstructures for its proposed car and locomotive shops at Shreveport, La., including engine house, machine shops, forge and blacksmith shop, and other buildings to cost approximately \$160,000 with equipment. E. F. Mitchell is chief engineer.

The Board of Trustees, University of Texas, Austin, has plans for a new steam-operated power house to cost \$200,000 with equipment.

The Decatur Ice & Coal Co., Albany, Ala., has plans under way for a new one-story ice-manufacturing and cold storage plant on property recently acquired, reported to cost \$65,000. Jervis Jones is general manager.

The Town Council, Maitland, Fla., is asking bids until Oct. 27 for equipment for a municipal waterworks, including a deep well motor-driven pumping unit with capacity of 75 gal. per min., 75,000 gal. steel tank on 100 ft. tower, and accessories. The J. B. McCrary Engineering Corporation, Orlando, Fla., is engineer. S. B. Hill, Jr., is town clerk.

The Florida Power & Light Co., West Palm Beach, Fla., is reported to be planning the construction of a steam-operated electric power house on the St. John's River, near Sanford, Fla., to cost \$1,000,000 including transmission system.

The City Council, Huntsville, Tex., has authorized extensions and improvements in the municipal waterworks, to include the installation of a new air compressor, motors and other equipment to cost \$40,000.

The Magnolia Gas Products Co., Houston, Tex., a subsidiary of the South Texas Cotton Oil Co., will proceed with the construction of a local plant for the production of acetylene gas, to cost \$500,000 with machinery.

The Sudan Independent School District, Sudan, Tex., plans installation of manual training equipment in its proposed two-story and basement high school to cost \$160,000, for which bids will soon be asked on a general contract. Ribble & Ribble, Lubbeck, Tex., are architects.

The Josey Ice & Coal Co., 1080 Pine Street, Beaumont, Tex., will erect a new ice-manufacturing plant at Long Avenue and Pearl Street to cost \$145,000. All machinery will be electrically-operated.

The Crane Co., Chicago, has asked bids on a general contract for its proposed three-story and basement factory branch at Houston, Tex., 100 x 240 ft., to cost \$200,000 with equipment. Alfred C. Finn, Bankers' Mortgage Building, is architect. U. H. Groenlund is local manager.

The Texas Central Power Co., San Antonio, Tex., is reported to be arranging for extensions and improvements in its plant and system in the vicinity of Natchez, Miss., to cost \$80,000.

The City Council, Frost, Tex., plans the installation of pumping machinery in connection with a proposed municipal waterworks estimated to cost \$46,000, in which amount bonds have been voted. Harvey B. McAllister, Waco, Tex., is engineer.

The Globe El Paso Cotton Oil Co., El Paso, Tex., has



H. E. BUCKLIN, Elkhart, Ind., inventor and manufacturer of a wind turbine, found that many prospective customers were timid about ascending the winding staircase to reach the windmill at the top of the steel tower, as shown in the accompanying photograph. A special elevator was designed by the Kimball Brothers Co., Council Bluffs, Iowa, and this elevator now takes prospects up to the windmill safely and smoothly.

plans for a one-story storage and distributing plant, 280 x 400 ft., to cost \$150,000 with equipment.

The Pleasanton Electric & Ice Co., Pleasanton, Tex., will soon begin work on a one-story ice manufacturing plant, 50 x 150 ft. John M. Marriott, Frost Building, San Antonio, Tex., is architect.

The Florida Lime Co., Inc., Ocala, Fla., is planning to purchase a steam shovel, crawler type, about $\frac{3}{4}$ -yd. capacity.

St. Louis

ST. LOUIS, Oct. 5.

THE Franke Motor Car Co., 1397 Hamilton Avenue, St. Louis, has awarded a general contract to Charles W. Schuler & Co., 2838 Texas Avenue, for a two-story and part basement service, repair and garage building, 65 x 105 ft., to cost \$40,000. Otto J. Kreig, Arcade Building, is architect.

The Skelly Oil Co., Eldorado, Kan., has work under way on improvements and extensions in its local refinery to include the construction of a new steam power plant, oil compounding works, lubricating oil plant and other structures, to cost \$300,000 with equipment.

The Southern Wheel Co., 611 Olive Street, St. Louis, manufacturer of car wheels, is said to have preliminary plans for new works on Goodfellow Avenue to cost about \$200,000 with machinery.

The Board of Education, De Soto, Mo., is considering the installation of manual training equipment in its proposed three-story high school to cost \$100,000, for which bids are being asked on a general contract. Martin J. Laubis, Bank of Poplar Bluff Building, Poplar Bluff, Mo., is architect.

The City Council, Piggott, Ark., will begin the immediate construction of a new one-story municipal electric light and power plant.

The Union Pacific Railroad Co., Omaha, Neb., has awarded a general contract to the American Construction Co., Sunderland Building, Omaha, for a new engine house with repair facilities at Marysville, Kan., to cost \$75,000 with equipment.

G. F. Green, 420 Rialto Building, Kansas City, Mo., architect, has plans for a two and three-story automobile service, repair and garage building, 66 x 140 ft., to cost \$125,000 with equipment.

The H. & M. Mining Co., Quapaw district, near Joplin, Mo., has been acquired by new interests, headed by Malcolm and John B. Green, 10 South La Salle Street, Chicago. The new owners are considering extensions and improvements, including enlargements in the present 200-ton concentrating plant.

The Conway Municipal Light & Power Co., Conway, Ark., plans extensions in its power plant, including the installation of two oil-operated engines, generators and accessory equipment. E. V. Leverett is superintendent.

Indiana

INDIANAPOLIS, Oct. 5.

BIDS will soon be asked by the City Council, Pendleton, Ind., for a one-story municipal electric light and power plant to cost \$20,000. Kenneth Owens is superintendent.

The Indiana Portland Cement Co., Limesdale, Ind., a subsidiary of the International Cement Corporation, 342 Madison Avenue, New York, has awarded a general contract to the State Construction Co., Indianapolis, for a two-story and basement addition, 50 x 100 ft., to cost \$70,000. A portion of the structure will be equipped as a laboratory. McGuire & Shook, Indiana Pythian Building, Indianapolis, are architects.

The Sutton-Raymond Corporation, Indianapolis, welding equipment, has secured property at 108 West Twelfth Street, and will operate a new shop at this location.

The Madison Township School Board, Hoagland, Ind., will install a manual training department in its proposed two-story and basement high and grade school to cost \$75,000, for which bids will soon be asked on a general contract. Pohlmeier & Pohlmeier, Central Building, Fort Wayne, Ind., are architects.

The Board of Education, Burlington, Ind., plans the installation of manual training equipment in its proposed two-story high school addition to cost \$75,000. C. E. Werking & Son, American Trust Building, Richmond, Ind., are architects.

Fire, Sept. 23, destroyed a portion of the plant of the Continental Radio Corporation, at Indianapolis. An official estimate of loss has not been announced. It is planned to rebuild.

The Board of Education, 150 North Meridian Street, Indianapolis, will install a manual training department in the proposed two-story and basement high school for colored students, estimated to cost \$520,000, for which plans have been prepared by Harrison & Turnock, Board of Trade Building, architects.

Pacific Coast

SAN FRANCISCO, Sept. 28.

THE Feather River Power Co., San Francisco, has plans for a hydroelectric power development on Buck's Creek, a tributary of the Feather River, estimated to cost \$7,000,000, with steel tower transmission system. Work will soon begin.

Dodge A. Riedy, Pacific Building, San Francisco, architect, will soon take bids for a two-story automobile service, repair and garage building to cost \$100,000 including equipment.

The Pasadena Ice Co., Pasadena, Cal., will build a two-story cold storage and refrigerating plant, 82 x 110 ft., to cost \$65,000. The structure has been designed for an additional story later. Hamm & Grant, Inc., Ferguson Building, Los Angeles, is engineer.

The E. K. Wood Lumber Co., Bellingham, Wash., is said to be completing plans for rebuilding the portion of its mill destroyed by fire Sept. 23, with loss estimated at \$500,000 including machinery. Fred J. Weed is president.

The Board of Education, Park City, Utah, plans the installation of manual training equipment in a proposed new high school to cost \$200,000, for which a bond issue is being arranged.

The Utah Power & Light Co., Salt Lake City, is concluding negotiations for the purchase of the plant of the Vernal Light Co., Vernal, Utah, and plans extensions to cost \$40,000.

The Weyerhaeuser Timber Co., Tacoma, Wash., is said to be completing plans for the initial unit of its proposed mills on property recently acquired at Longview, Wash., to cost \$1,500,000 with equipment. Other units will be built later, with ultimate cost of more than \$5,000,000.

The Lilliwaup Power & Light Co., 206 First Avenue, Seattle, plans the construction of a hydroelectric power station at Price's Lake, a tributary of the Lilliwaup River, Mason County, to cost about \$100,000.

The E. Z. Way Soap Co., Oakland, Cal., is reported to be arranging for the early rebuilding of its plant, including power house, recently destroyed by fire, with loss estimated at \$100,000 including equipment.

The Owen Oregon Lumber Co., Medford, Ore., has plans for a new mill, including improvements in the present plant to develop on output of 300,000 ft. of finished stock per day. The expansion is estimated to cost \$400,000 with machinery. James H. Owen is general manager.

The Great Western Power Co., 530 Bush Street, San Francisco, is planning the construction of an automatic power substation at Merced, Cal., with capacity of 25,000 kva., to cost \$350,000.

Plans are being prepared for a one-story manual arts building, 70 x 228 ft., for the Jacob A. Riis boys' school on Sixty-ninth Street, Los Angeles. Dodd & Richardson, Brack Shops Building, are the architects.

Contract for 10 brick and steel factory buildings, each 95 x 200 ft., have been awarded to the Union Engineering Co., Bartlett Building, Los Angeles, by the Soda Potash Products Co., Riverside, Cal.

The city of Ventura has granted the Midway Gas Co. a franchise for a gasoline pipe line extending through Ventura to Glendale, where it will connect with the Los Angeles distributing system.

Foreign

THE Municipal Council, Barranquilla, Colombia, is arranging a fund of \$4,000,000 for electrification and extension of railroads; extensions and betterments in the public market, including refrigerating machinery, and other work.

The Electric Power Corporation (Elektrowerke Aklengesellschaft), Berlin, Germany, owned through the United Industrial Corporation by the German Government, is disposing of a bond issue in the United States totaling \$2,500,000, a portion of the fund to be used for extensions and improvements in power plants and system.

The Ministry of Public Works, Bogota, Colombia, is planning to purchase road-building machinery to cost about \$120,000. Information at the office of the Industrial Machinery Division, Bureau of Foreign and Domestic Commerce, Washington, reference 35X.

The Swedish Chamber of Commerce in the United States, 2 Broadway, New York, has received an inquiry (232) from a company in Sweden desirous of getting in contact with an American manufacturer of gas, steam and water pipe.

The Ferrocarril Central Argentino, Buenos Aires, Argentina, is completing plans for the electrification of its lines from Retiro (Buenos Aires) to Villa Ballester and Tigre, by way of Goghlan, about 25 miles, and will soon arrange for purchases of equipment.

J. Rulopez Cristobal, Peraranda de Bracamonte, Salamanca, Spain, is in the market for American machinery for the manufacture of reclaimed rubber goods.

Canada

TORONTO, Oct. 5.

DEMAND for machine tools has materially increased the past month or six weeks. Recent orders include tools of a diversified nature and cover practically every line of industrial activity. The majority of sales are for one or two tools to a purchaser, but within the past several days a few small lists have appeared. The greater part of current business is for replacement, with only a small part on new works account. The automotive industry is still the principal buyer, and large sums have been spent by manufacturers and for repair shops and garages. Small lists are appearing from time to time from the Canadian National Railways for replacement needs. Wood-working tools have shown considerable improvement, and dealers report a good volume of business in prospect.

White & Thomas, 212 Simcoe Street, Toronto, are in the market for a power or trip hammer.

The New South Wales Railway Commissioners invite the following tenders: Closing Oct. 21, one 2-ton industrial electrical elevating truck to Tramway Stores, Randwick, Sydney; closing Nov. 11, one 5-ton 3-motor electric overhead traveling crane; closing Dec. 16, ten 1800-kva., single phase, 50-cycle transformers.

The Steel Co. of Canada, Ltd., Hamilton, Ont., has awarded contracts in connection with alterations to its plant at Swansea, Ont.

The Kingdon Mining, Smelting & Mfg. Co., Ltd., 314 Beaver Hall Hill, Montreal, is in the market for motors, fans, furnaces, hoists, cranes, etc., for its plant at Kingdon, Que.

The West Lake Brick Co., Wellington, Ont., has purchased a building and will immediately begin the installation of equipment. Some tools and machinery will be required. J. G. Shepard is manager.

The City Council, Toronto, passed the by-law authorizing the construction of a sewage plant and system in North Toronto to cost \$11,000,000.

Western Canada

The formal opening of the British Columbia Electric Railway Co.'s power plant at Stave Lake, B. C., took place recently. The plant was built at a cost of \$3,500,000, and the company now plans further developments over the next fifteen years, an early start being proposed on a power project on the Bridge River, north of the city of Vancouver, B. C. The first unit of this proposed plant will cost in the neighborhood of \$13,000,000 and will provide 60,000 hp.

The Spillers Canadian Milling Co., Ltd., Calgary, Alta., has been incorporated and will proceed immediately with the erection of a plant to cost \$500,000. Equipment will cost another \$250,000.

Industrial News Notes

The Vom Baur Engineering Corporation, Woolworth Building, New York, has taken over the electric furnace business of C. H. Vom Baur, who is president of the corporation. The other officers are O. W. Wallstedt, treasurer, who was for seven years general manager of the Stockholm office of the Allgemeine Elektrizitaets Gesellschaft, and A. H. Strong, secretary, for 20 years technical director of Naylor & Co., Inc., and in later years its vice president.

The Carbine-Harang-Machinery & Supply Co., Annunciation and Howard Avenues, New Orleans, recently incorporated, will act as jobber, dealing in machinery of all kinds. It is desirous of getting in touch with manufacturers needing representation in that territory.

Walworth Mfg. Co., Boston, stockholders have ratified a proposal of the directors to increase capitalization to provide additional working capital and funds for the purchase of the Kelley & Jones Co., assets recently acquired by the company. The new plan calls for an issue of \$8,500,000 first mortgage 6 per cent 20-yr. bonds, \$2,500,000 6½ per cent 10-yr. debentures, 50,000 option warrants, and an increase in the stock capitalization of 100,000 shares to 500,000 of no par value.

The Ampco Twist Drill & Tool Co., Detroit, and the Ampco Twist Drill Co., Jackson, Mich., have been consolidated under the name Ampco Twist Drill Co., incorporated with a capital of \$1,000,000. Plant and offices are located at Jackson, where the corporation will manufacture carbon and high speed twist drills and reamers. It has moved into its new plant, where operations will be in full swing shortly. Chester P. O'Hara is one of the principals.

The Kell Mfg. Co., 109 Tichenor Street, Newark, N. J., recently incorporated, will continue an established business manufacturing Alive ball bearing tail-stock center and special machinery, including dies. Most of the work is done on a contract basis. Jacob Kell is sole owner.

The Addikson Hardware Co., Jackson, Miss., recently incorporated, is an outgrowth of the Addikson & Bauer Hardware Co., wholesaler and retailer of hardware for many years. R. E. Addikson, president; H. M. Addikson, vice-president, and J. Hamilton Buck, secretary-treasurer, reorganized the business.

The Coleman Crank Case Oil Heater Co., Box 869, Lincoln, Neb., has been organized to manufacture heaters for automobiles. Production as now planned provides for 500 units per day; should this number be increased considerably, the company will be interested in getting quotations from larger manufacturers. L. O. Paine is one of the principals.

The C-V Equipment Corporation, Utica, N. Y., recently incorporated, is in production on a flexible nozzle for gasoline service pumps. It will confine its activities to the production of service station equipment. Wortman, Brown & Co., 223 Union Station Building, Utica, are representatives.

Industrial Foundries, Inc., has taken possession of the plant formerly occupied by the Hilton Brass Foundry Co. at 371 Boyden Avenue, Hilton, N. J., and will supply castings to manufacturers in Newark and vicinity. It will specialize in making match plates for both iron and brass work. Facilities are ample for the present. L. L. Linehan is treasurer.

The Fundom Hoist & Shovel Co., Fostoria, Ohio, recently incorporated with capital stock of \$50,000, will continue a

business as builder of truck and tractor attachments. The company is in operation. E. H. Fundom is one of the principals.

The American Seamless Tube Corporation of California has been incorporated with capital stock of \$2,000,000 and opened offices at 910 Petroleum Securities Building, Los Angeles. It has a franchise from the American Steel Export Co., New York, for the exclusive distribution of seamless casing made in Continental Europe, throughout Mexico and the United States west of the Rocky Mountains. A. W. Campbell is president of the new firm; A. J. Carr, vice-president and general manager; F. L. Feisthamel, vice-president and sales manager, and C. C. Cummings is vice-president and treasurer.

The Columbus McKinnon Chain Co., Columbus, Ohio, reported an increase of more than 23 per cent in the volume of business during the past fiscal year as compared with the previous year at the annual meeting of stockholders Sept. 17. Directors reelected were Charles M. Wambaugh, Julius F. Stone, Howard C. Park, Isaac B. Cameron, Cyrus Huling, Scott A. Webb and A. J. Pembroke.

Plant and property of the American Bronze Co., Berwyn, Pa., recently under financial strain, has been taken over by Ralph L. Hampton, sheriff of Chester County, and will be

Robert W. Hunt Co., doing a business in inspecting and other engineering, announces the opening of a branch office and cement laboratory at Room 420, Alabama Power Co. Building, Birmingham.

The Buhr Machine Tool Co., Ann Arbor, Mich., organized a few weeks ago, has taken over the good will and patents of the J. F. Buhr Machine Tool Co., an organization which was an outcome of the Nelson-Blanck Mfg. Co. The new company was organized to manufacture Buhr multiple drillers and tappers originally made by the Nelson-Blanck Mfg. Co. and for the last year and a half manufactured under a contract which, however, will expire Jan. 1. The Buhr company has purchased the Forge Products plant at Ann Arbor and has bought and installed equipment. Officers are: Joseph F. Buhr, president and general manager; Julius Haarer, vice-president; Edward F. Bauer, secretary, and Fred Stowe, treasurer.

The Beamer Gear Shift Patents, Inc., Kokomo, Ind., recently incorporated, was formed for the purpose of selling, licensing and manufacturing mechanical gear shifts. Plans of the company are not yet fully formulated and a formal announcement to the trade will be made later.

The New England Corrugated Box Co., Inc., Milford, Conn., recently formed, has rented 20,000 sq. ft. of floor space, but hopes to have a plant of its own within the next year. The company manufactures corrugated shipping containers and corrugated paper products.

McQuate Rubber Co., Marion, Ohio, recently incorporated with \$40,000 capital stock, will manufacture and deal in rubber products. The company is now remodeling a plant, but expects to build a new one within the next 15 months. Officers are Ward W. McQuate, president; Don D. McQuate, vice-president; Earl E. McQuate, vice-president; Layard D. Miller, treasurer; Ben T. Wyant, secretary.

The Western Sales Co., 2305 Grand Avenue, Kansas City, Mo., recently organized, manufactures and distributes the Western automatic oil burner. At present it makes two models of this type of burner. The company is in the market for the following: Thermostats, program switches, regulators, diaphragm valves, strainers, motors, aluminum fans, castings, pots, oil valves and pipe lines.

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Current Metal Prices

On Small Lots, Delivered from Stocks, New York

THESE prices are given for the convenience of small-lot buyers whose requirements do not run into mill-size orders.

Only base prices can be listed in some cases, due to limits of space; other items of a given group are deducible from the base price.

The prices which are quoted below are those at which small lots may be bought, whether from jobbers' or other stocks.

Complete market reports and prices on large shipments from mills will be found elsewhere under "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

Bars:	Per Lb.
Refined iron bars, base price.....	3.24c.
Swedish charcoal iron bars, base.....	7.00c. to 7.25c.
Soft steel bars, base price.....	3.24c.
Hoops, base price.....	4.49c.
Bands, base price.....	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base.....	3.34c.
Channels, angles and tees under 3 in. x ¼ in. base.....	3.24c.
Steel plates, ¼ in. and heavier.....	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger.....	3.30c.
(Smooth finish, 1 to 2½ x ¼ in. and larger).....	3.65c.
Toe-calk, ½ x ¾ in. and larger.....	4.20c.
Cold-rolled strip, soft and quarter hard.....	7.00c.
Open-hearth spring steel.....	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds and hex.....	4.00c.
Squares and flats.....	4.50c.
Standard tool steel, base price.....	15.00c.
Extra tool steel.....	18.00c.
Special tool steel.....	23.00c.
High-speed steel, 18 per cent tungsten.....	70c.

Sheets

Blue Annealed

No.	Per Lb.
No. 10.....	3.89c.
No. 12.....	3.94c.
No. 14.....	3.99c.
No. 16.....	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20.....	3.70c. to 3.95c.	.....
Nos. 22 and 24.....	3.75c. to 4.20c.	4.35c.
No. 26.....	3.80c. to 4.25c.	4.40c.
No. 28*.....	3.90c. to 4.35c.	4.50c.
No. 30.....	4.10c. to 4.55c.	.....

Galvanized

No.	Per Lb.
No. 14.....	4.00c. to 4.35c.
No. 16.....	4.15c. to 4.50c.
Nos. 18 and 20.....	4.30c. to 4.65c.
Nos. 22 and 24.....	4.45c. to 4.80c.
No. 26.....	4.50c. to 4.95c.
No. 28*.....	4.90c. to 5.25c.
No. 30.....	5.40c. to 5.75c.

*No. 28 lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel			Wrought Iron		
	Black	Galv.		Black	Galv.
½ in. Butt....	46	29	½ in. Butt....	4	+19
¾ in. Butt....	51	37	¾ in. Butt....	11	+9
1-3 in. Butt....	53	39	1-1½ in. Butt....	14	+6
2½-6 in. Lap..	48	35	2-in. Lap....	5	+14
7 & 8 in. Lap..	44	17	3-6 in. Lap....	11	+6
11 & 12 in. Lap.	37	12	7-12 in. Lap...	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron,
80, 20, 10 and 5 per cent off list

Steel Wire

	Per Lb.
Bright, basic.....	4.25c.
Annealed, soft.....	4.50c.
Galvanized, annealed.....	5.15c.
Coppered, basic.....	5.15c.
Tinned, soft Bessemer.....	6.15c.

†Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet.....	19½c. to 20½c.
High brass wire.....	19½c. to 20½c.
Brass rods.....	16½c. to 17½c.
Brass tube, brazed.....	27½c. to 28½c.
Brass tube, seamless.....	23½c. to 24½c.
Copper tube, seamless.....	24½c. to 25½c.

Copper Sheets

Sheet copper, hot rolled, 21½c. to 22½c. per lb. base.
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin	Grade "AAA"	Grade "A"	Coke—14x20	Prime	Seconds
	Charcoal 14x20	Charcoal 14x20	80 lb...	\$6.15	\$5.90
	IC... \$11.25	\$8.85	90 lb...	6.30	6.05
	IX... 12.85	10.85	100 lb...	6.45	6.20
	IXX... 14.40	12.55	IC...	6.65	6.40
	IXXX... 15.75	13.85	IX...	7.85	7.60
	IXXXX... 17.00	15.05	IXX...	9.00	8.75
			IXXX...	10.35	10.10
			IXXXX...	11.35	11.10

Terne Plates

	8 lb. coating, 14 x 20
100 lb.....	\$7.00 to \$8.00
IC.....	7.25 to 8.25
IX.....	8.25 to 8.75
Fire-door stock.....	9.00 to 10.00

Tin

Straits, pig.....	61½c.
Bar.....	66½c. to 68½c.

Copper

Lake ingot.....	16½c.
Electrolytic.....	16½c.
Casting.....	16 c.

Spelter and Sheet Zinc

Western spelter.....	9½c.
Sheet zinc, No. 9 base, casks.....	12½c. open 13c.

Lead and Solder*

American pig lead.....	10½c. to 12½c.
Bar lead.....	12½c. to 13½c.
Solder, ½ and ½ guaranteed.....	40c.
No. 1 solder.....	37c.
Refined solder.....	30½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.....	75c. to 90c.
Commercial grade, per lb.....	35c. to 50c.
Grade D, per lb.....	25c. to 35c.

Antimony

Asiatic.....	20c. to 21c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), ingots for remelting, per lb....	31c. to 34c.
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Old Metals

Business is more active and the market is firmer. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible.....	12.00
Copper, heavy wire.....	11.75
Copper, light bottoms.....	9.50
Brass, heavy.....	7.25
Brass, light.....	6.00
Heavy machine composition.....	9.00
No. 1 yellow brass turnings.....	8.50
No. 1 red brass or composition turnings.....	8.25
Lead, heavy.....	7.75
Lead, tea.....	6.25
Zinc.....	4.50
Cast aluminum.....	18.50
Sheet aluminum.....	18.50